

MODERN PACKAGING

JULY

1944

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N. SYDNEY

— easier than
shooting fish!



This emergency ration isn't exactly as tasty as a turkey dinner.

But it'll keep a man going quite a while on a life raft.

And it's certainly better than shooting fish with a revolver. Remember how some of the starving castaways told about doing that in the early days of the war? Said they got about 100 per cent misses, too.

Our part in this ingenious device, which can make the difference between starvation and survival on a life raft, is a humble one. We developed the convenient hermetically sealed container for the emergency ration.

But it gives us a big kick to be associated with war equipment like this—even if in only a small way.

We get the same kind of thrill out of making the outer container for blood-plasma transfusion kits

... smoke signals ... distress flares ... and a lot of other things that help get fighters out of tight spots.

Of course, our biggest war job is making food cans—both for the fighting front and the home front.

And from all this experience we're gaining new skills, through solving new problems—all the time.

Much of what we're learning may be applicable to your postwar packaging problems. And while we can't do much more than *talk* about your postwar packages just now, we'd certainly be glad to do that.

Perhaps, we can help you, too, with your general planning. Consult our representative, or write ...



AMERICAN CAN COMPANY

230 Park Avenue, New York 17, New York

FOR VICTORY, BUY AND HOLD WAR BONDS

TECHNOLOGY DEPT:

Pickles are especially rich in vitamins, minerals, and other nutritive elements so essential to a wartime diet affected by the shortages and rationing of many other standard foods. Depend upon us to serve packers of pickles to the best of our ability for the duration of the war. Phoenix Metal Cap Co., Chicago and Brooklyn.



Elmer Gaudin

MODERN PACKAGING

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THIS MONTH'S COVER

Once again, in this third wartime July, the packaging field pays tribute to the Nation's Flag. The immense job of packaging, for both the war fronts and the home front, has been carried on relentlessly in the face of shortages that in less urgent times would be paralyzing. In this July of 1944, the symbolic package rides with the Stars and Stripes toward victory on every front.



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EXECUTIVE and EDITORIAL OFFICES: 122 E. 42nd St., New York 17, N. Y. WASHINGTON OFFICE: 625 Colorado Bldg., 14th & G. Sts., D.C. 6

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Duraglas

YOU CAN SELL IT
BETTER
IN GLASS



"Duraglas-Prints" give you glimpses of the future

● The old blueprints won't do for the future.

They don't show the shape of coming events.

But a Duraglas-print reveals that the trend toward "seeing what you buy before you take it home" is becoming a habit with more and more shoppers.

And American women insist on keeping improvements that have become a pleasant part of their daily lives . . . as glass-packaged products now are.

Packers and bottlers who use Duraglas containers are not only adding the eye-appeal of their products to their brand acceptance...they also enjoy Duraglas Customer Service—from the production line to customer's minds.

Duraglas Customer Service adds four distinct values to Duraglas containers: (1) Quality Control, (2) Packaging Research, (3) National Advertising, (4) Merchandising and Sales Promotion . . . as only Owens-Illinois has developed these glass container services.

OWENS-ILLINOIS GLASS COMPANY
TOLEDO, OHIO



1. America's most completely equipped container research laboratories—located at Toledo, Ohio and San Francisco, California.

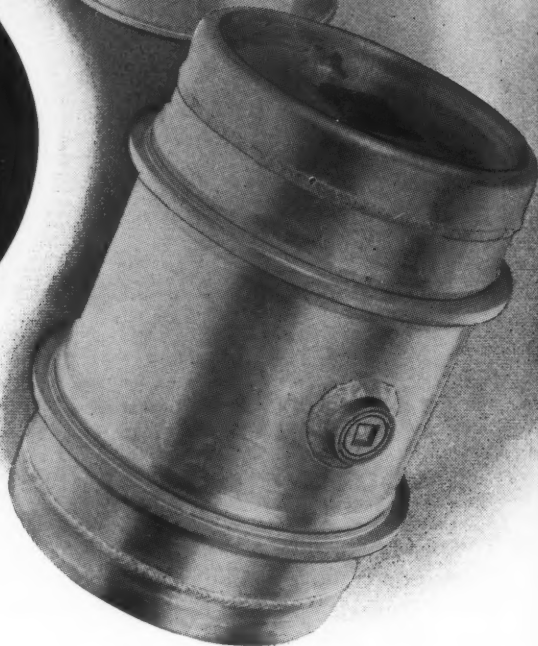
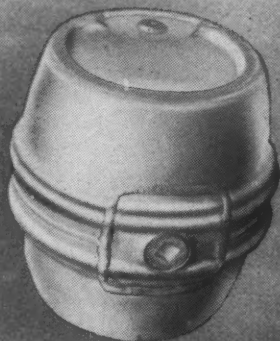
2. The "know how" resulting from more products going to market in Duraglas containers than in any other brand of glass.

3. Twenty strategically located plants with the most modern production facilities.

4. Duraglas Customer Service from the production line to the consumer's mind. Quality Control . . . Packaging Research . . . Merchandising and Sales Promotion . . . National Advertising in leading magazines reaching millions of men and women . . . "Broadway Matinee," complete Columbia Coast to Coast Network—Five times a week—

Duraglas
TRADE MARK REG. U. S. PAT. OFF.
CUSTOMER SERVICE

*All designed to
help you sell
your products
in Duraglas
containers.*



Aluminum

CONTAINERS GOOD FOR SHIPPING
OR STORAGE...

DON'T think of aluminum barrels, drums and other bulk containers as something new under the sun. They were used before the war—and in a big way.

DO think of them as a new possibility for *your* products. They have a lot to offer for shipping and storing a wide variety of chemicals and compounds.

Aluminum, the metal that is “friendly to food”, protects quality, preserves color and flavor, does not cause contamination of any kind.

As for strength, the ability of aluminum containers to withstand hard usage has been conclusively proved by hundreds of thousands of aluminum beer barrels put in service before the war. Little attention is needed to keep them on the job, so maintenance costs are low.

The light weight of aluminum containers and

their utility design make handling easier in the plant and on the road. Light weight cuts shipping costs, too.

You may not be able to get aluminum containers until after the war. However, some uses are permitted today. WPB order M-1-i states, in effect, that where chemical action makes the use of other materials impracticable, aluminum containers are available.

Write ALUMINUM COMPANY OF AMERICA, 2129 Gulf Building, Pittsburgh 19, Penna.

ALCOA  ALUMINUM

Geon

Vinyl Resins & Plastics

**Highly versatile synthetic materials
offered to manufacturers and finishers**

FROM GEON resins may be made a wide variety of thermoplastic elastomers that can be used as coatings for papers, calendered or cast into film and sheet, pressure or injection molded, punched or extruded—all at low cost on standard machinery. Or in other forms, GEON may be used as a sizing, ink or paint. The number of applications yet to be discovered seems limitless.

Here is a list of properties which may be found in GEON and GEON treated materials in a wide variety of combinations:

Flexible	Increased tensile strength
Waterproof	Easily embossed
Spongeable	Wide range of colors and luster
Lightweight	Can be heat-sealed
Odorless	
Increased tear resistance	

Resistant to

Acids	Foods	Spots and	Light
Alkalies	Creasing	stains	Aging
Chemicals	Flame		Cold
Oil	Mildew	Sticking	Heat

This impressive list should suggest innumerable applications for GEON in the packaging and paper fields. Our research staff and laboratory facilities are available to help you work out any special problems or applications.

★ ★ ★

*For answers to your questions or for help
on specific problems write*

Dept. L-2 CHEMICAL DIVISION
The B. F. Goodrich Company
ROSE BUILDING E. NINTH AND PROSPECT
CLEVELAND 15, OHIO

GEON is available to industrial users subject to allocation under General Preference Order M-10. Limited quantities can be had for experiment.

The Ultimate In Craftsmanship

Labels, Seals, Tags, Wraps

Cameo offers the ultimate in craftsmanship—the basic skill which transforms ordinary materials into things of beauty.

Cameo's precision die-making and die-cutting—embossing color-printing—designing—are services known for the highest quality of performance.

Cameo is recognized as one of the finest sources for distinctive labels, seals, tags and wraps. Under today's conditions, we are limited by the materials available. However, within these limits you can still demand and Cameo can still give you beautiful two- and three-dimensional reproduction.



IN CANADA: CAMEO METAL SEAL & LABEL CO., 371 DOWD ST., MONTREAL

Five weeks out of the garden
-and still "as fresh as a daisy"



You know how quickly cauliflower gets spongy and rusty looking — just a few days out of the garden. But cauliflower can be kept as fresh and daisy-white as the moment it was picked for five whole weeks by sealing it in **PLIOFILM**!

Tests made by the University of Florida with cauliflower and other perishables like celery, apples, grapefruit, corn on the cob, peaches and pears proved that **PLIOFILM** seals in natural garden freshness, flavor and vitamins and keeps out harmful spoilage for weeks and even months.

PLIOFILM brings these same packaging advantages to all moisture-sensitive products. It gives you a transparent, spoilageproof closure that wraps easily, heat seals air-water-moisture-tight, has high tensile strength and durability, and adds greatly to point-of-sale attractiveness.

Remember, before the war, how many large national firms marketed tobacco, fish, nuts, cheese, coffee in colorful, prize-winning **PLIOFILM** wraps? Right now, **PLIOFILM** is doing war duty *exclusively*. But after Victory, **PLIOFILM** will be back. To be sure to get your product off to a fast post-war start, start now with **PLIOFILM** plans for your package-to-be.

**Buy More War Bonds—
Buy For Keeps**

Pliofilm

FOR BETTER POSTWAR PACKAGING

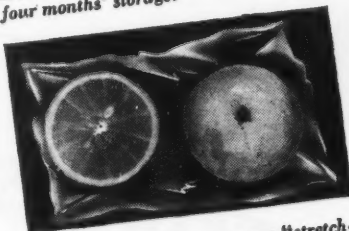
A PRODUCT OF GOODYEAR RESEARCH



FOUR MONTHS OLD!

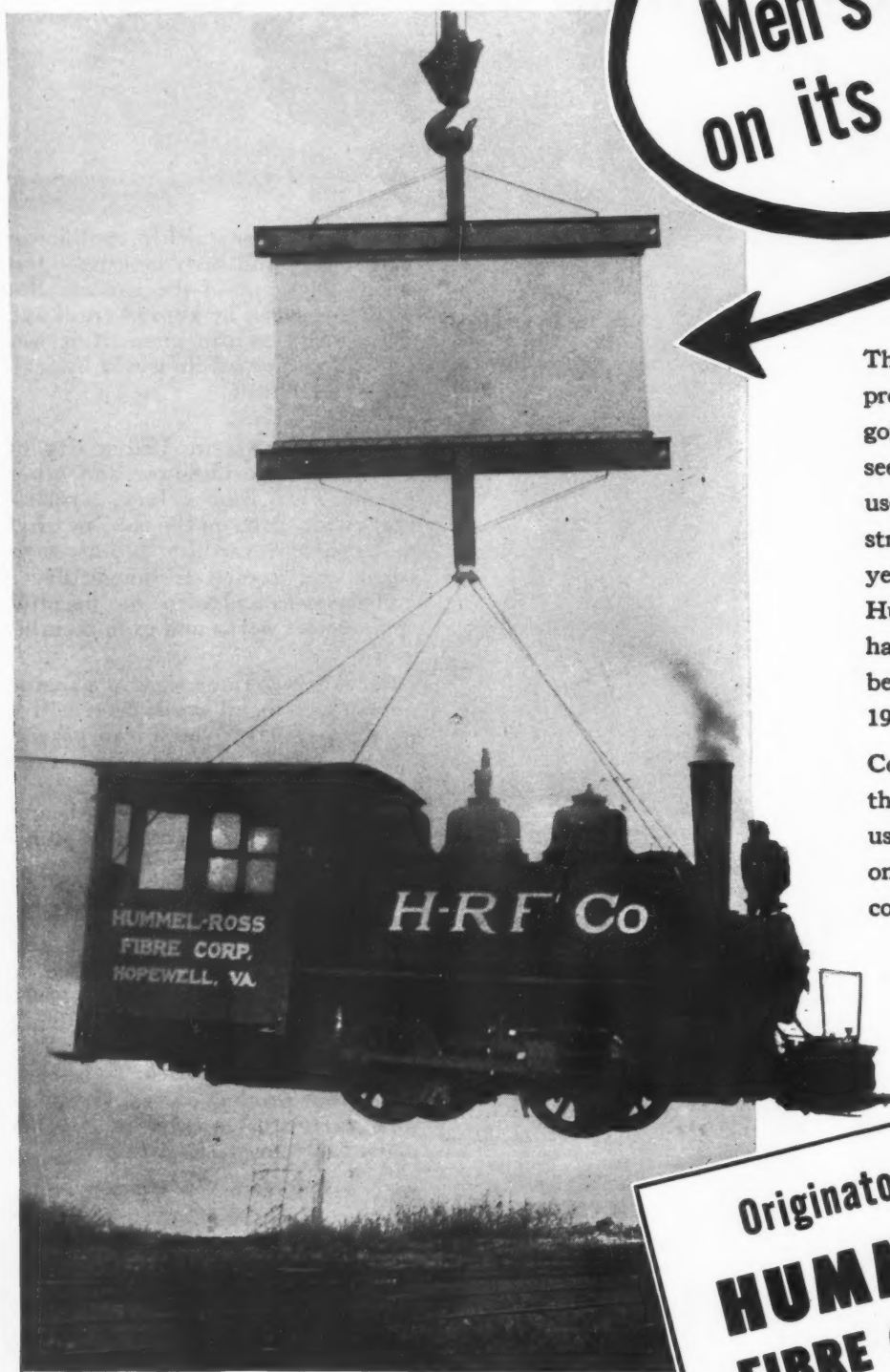


Here's the way oranges look when they were not wrapped in Plio-film — note the advanced stage of spoilage, after four months' storage.



This still-perfect orange was "stretch-wrapped" in Plio-film. Official report states: "The oranges wrapped in Plio-film lost less than 2% of their initial weight after four months' storage—the original taste and appearance of the fruit were unchanged—Vitamin C content very slightly diminished."

★ 1931. A piece of Hummel-Ross Fibre Board one twenty-second of an inch thick lifted a locomotive weighing 15 tons without breaking. (From actual photograph. Used by Ripley in "Believe It Or Not.")



**Today
Men's Lives hang
on its toughness**

The use of Hummel-Ross Kraft Paper products for thousands of containers going to our fighting fronts may not seem as spectacular as this "stunt" used to prove the toughness and strength of Hummel-Ross Fibre Board years ago. As a matter of fact, Hummel-Ross Kraft Paper and Board has to be, and is, even stronger, better able to take punishment in 1944 than in 1931.

Constant research, never more alert than today, has originated many new uses for H-R products . . . is even now on the eve of remarkable new discoveries. One of our biggest jobs is solving problems for converters of Kraft specialties. Bring us yours.

Originators . . . Creators
HUMMEL-ROSS
FIBRE CORPORATION
Hopewell, Virginia, U.S.A.



What your postwar package will have to be!

Bear in mind that war-developed production methods have *lowered* package costs—but *raised* standards of package utility. There were notable advances in packaging *before* the war. And manufacturers competed to get the best sales-making packages. But **TODAY**—many a prewar package is already "outdated"—obsolete in structure, material or design.

SIX QUALITIES will determine the *selling chances* of your present (or contemplated) package in the competitive "scramble" for postwar markets. Here they are:

- 1** Your postwar package must quickly, unmistakably identify your product.
- 2** Must be easy to handle, to stack and display.
- 3** Must conveniently dispense or protect the product.
- 4** Must be practical—production planned—economical to manufacture, easy to fill or pack.
- 5** Must—in a modern manner—be notably "good looking."
- 6** Must convey a promise of superior quality within!

W. C. Ritchie
AND COMPANY
 8846 Baltimore Avenue • Chicago 17
 NEW YORK • DETROIT • LOS ANGELES • ST. LOUIS • MINNEAPOLIS

Plan your postwar package NOW!

Let Ritchie help you and it will have the right material and structure for its job. It will be practical, convenient to use, easy to display. It will proclaim your product identity. It will be memorable and attractive. And Ritchie's expanded, war-developed facilities for volume production assure its low cost. Write us today.

Set-Up Paper Boxes

Fibre Cans

Transparent Packages

INDIVIDUAL SERVINGS

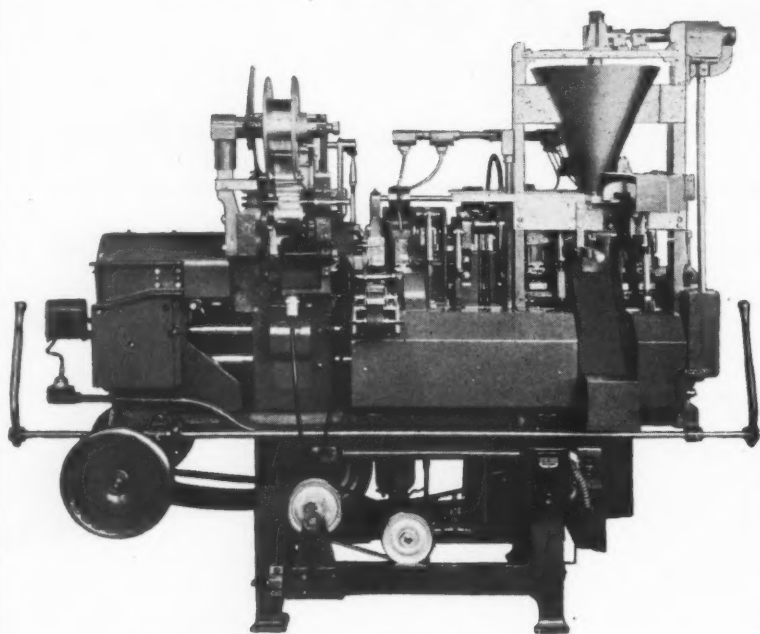
*of food powders,
beverage powders,
drugs, chemicals, etc.
(in powder or tablet form)*

PACKAGED AUTOMATICALLY IN AIR-TIGHT, MOISTURE-

PROOF ENVELOPES

The Model W-18-1

ENVELOPE-PACKAGE FORMING,
FILLING AND CLOSING MACHINE



(Running Speed: 60 complete packages per minute)

The trend is toward packaging in one-person servings, which provide convenience and hygienic protection for the consumer. Investigate this modern and proven machine for your post-war packaging.

The machine can be equipped for producing envelopes from laminated heat-sealing paper, or from aluminum foil (the latter now, of course, unobtainable until after the war).

The printed stock is cut from a roll, the correct cut-off length being controlled by electric eye. The package is formed by crimping and heat-sealing the sides, and the correct amount of material measured into the envelope. The top of the package is then folded, crimped and heat-sealed.

The resulting package is air-tight and moisture-proof, and is thus ideally suited for products of a hygroscopic nature.

UNITED STATES AUTOMATIC BOX MACHINERY CO., INC.

(Divisions: National Packaging Machinery Co.—Cartoning Machinery Corp.)

22 Arboretum Rd., Roslindale, Boston 31, Mass.

Branch Offices: New York, Cleveland, Chicago

Los Angeles: Krugh Equipment & Supply Co.

Idea Corner

For Postwar Package Planners

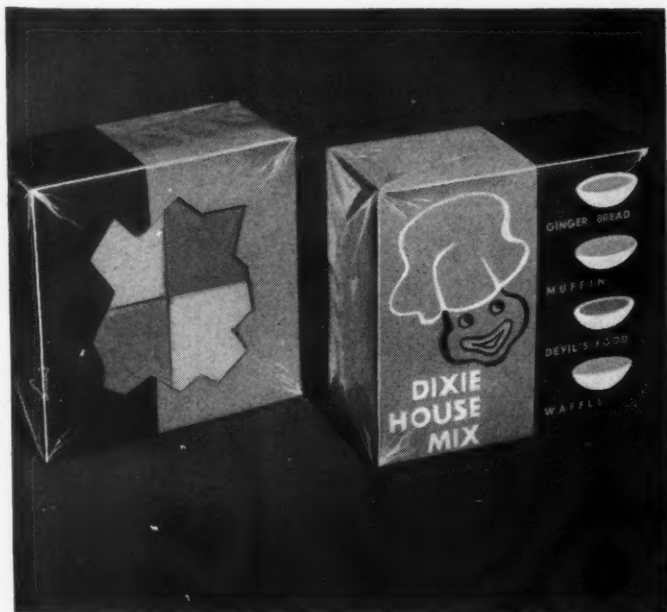


IDEA NO. 1 Here's a ready-to-buy unit that saves customer and clerk time, opens a critical bottleneck in the retail store. It permits inspection and selection. Convenient? Sure! And don't overlook the "quality" note.

A QUICK PICK-UP SIRLOIN... TISSUES THAT ZIP INTO ACTION... "MIX" QUARTETTE...



IDEA NO. 2 Set your imagination to work on making your product easier to use. Often a simple idea like this "zipper pack" is all that's needed to change a "container" into a "convenience."



IDEA NO. 3 Maybe one of your products is taking all the bows. Why not let shoppers learn to love other members of the family? An assortment package provides a convenient introduction. And eye-appeal wins impulse purchases.

Basic Themes of Postwar Merchandising

Here are six fundamentals that will help to lower postwar distribution costs and speed up turnover. Use them to check your postwar package plans.

- 1. SELF-SERVICE:** Emphasis on self-selection and display value.
- 2. CONVENIENCE:** Size, shape, quantity, ease of use are predominant factors.
- 3. INFORMATIVE LABELING:** Need for concise information, terse selling message.
- 4. IMPULSE BUYING:** A high percentage of all buying done on impulse.
- 5. PROTECTION:** Adequate protection geared to rapid turnover.
- 6. VISIBILITY:** 85% of all buying done through the eyes. Visibility of primary importance in the package of the future.

Would you like to see more postwar packaging ideas? Just write: E. I. du Pont de Nemours & Co. (Inc.), Cellophane Division, Wilmington, Del.

Du Pont Cellophane



Better Things for Better Living . . . Through Chemistry

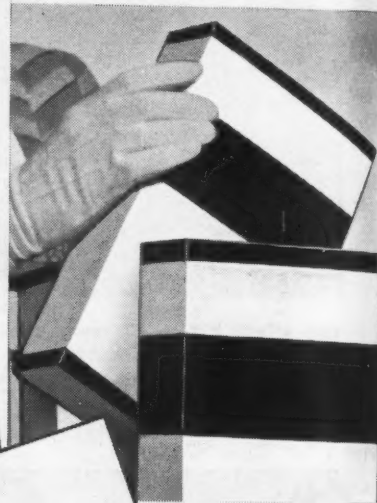
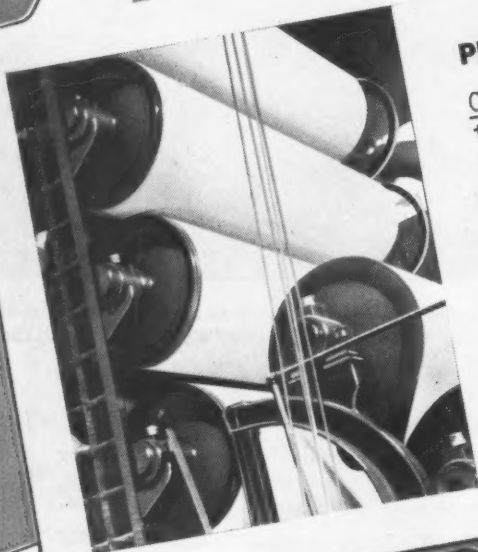
VISIBILITY... a powerful force in modern merchandising

Put these Coated Lithwite fac

P

PROVED PERFORMANCE

Coated Lithwite is the original paper-board made and coated in one continuous, economy operation. Years of wide use and constant improvement have given merchandising approval to this exceptional board.



F

DEPENDABLE FOLDING

Fewer jam-ups in high speed filling machines with Coated Lithwite. It folds and scores accurately without shattering or flaking. Takes a positive, tight seal.



...vite facts in your

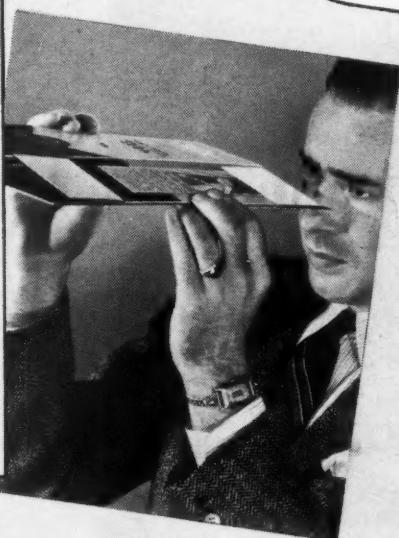
POSTWAR PACKAGING FILE

W

UNUSUAL WHITENESS

A special mineral coating gives Coated Lithwite a basic whiteness that makes it stand out on the shelf or counter... imparts a velvety softness not present in many more costly boards.

P



BRILLIANT PRINTABILITY

Coated Lithwite's even surface takes inks smoothly with finer definition of detail. No background muddiness to rob colors of tone and brilliance. No chalkiness. Less ink absorption.

This brilliant, time-proved, economy paperboard, today, bears the imprint of many famous products. Gardner-Richardson would like to make it available to you *now*. But all we can do, at present, is the next best thing . . . promise you that Coated Lithwite will be available in greater quantity in the postwar days when your product will need all the eye-appeal and buy-appeal you can pack around it.

The GARDNER-RICHARDSON Co.

Manufacturers of Folding Cartons and Boxboard

MIDDLETOWN, OHIO

Sales Representatives in Principal Cities: PHILADELPHIA • CLEVELAND • CHICAGO • ST. LOUIS • NEW YORK • BOSTON • PITTSBURGH • DETROIT



FAMOUS JEWELS IN HISTORY... II

The HOPE *Diamond*

One of the myths about the Hope diamond is that its owners are relentlessly pursued by hard luck. History proves this to be untrue. First record of this richly-colored stone—bluest of the diamonds—is in 1642, when an early diamond trader, Tavernier, bought it in India. It passed through various hands during the next two hundred years, gradually reducing in size through subsequent cuttings, from 112½ to 44¼ carats. In 1830 Henry Thomas Hope bought it for \$90,000. Thus it received its permanent name.

The rich color of the Hope diamond has its packaging counterpart in Hazen papers. Available in all colors of the spectrum, in patterns and textures as varied as your requirements, Hazen papers are the choice of discriminating packagers.

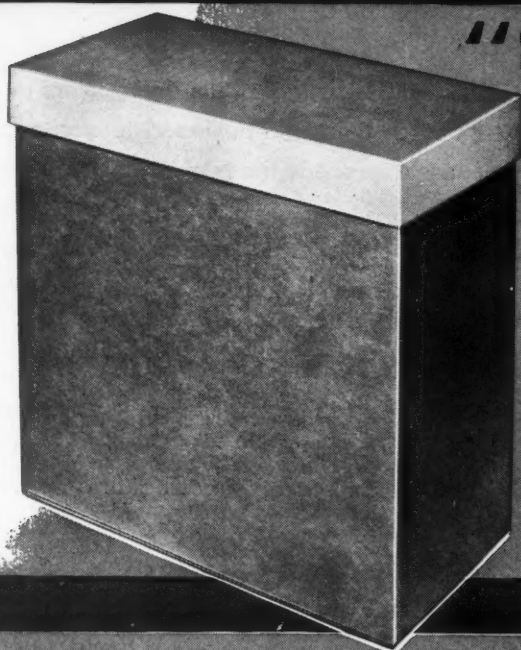
HAZEN PAPER CO.

H O L Y O K E M A S S A C H U S E T T S



ADVERTISEMENT No. 5 OF A SERIES
DEMONSTRATING THE DIVERSIFIED
RANGE OF PACKAGING MATERIALS
USED BY MENASHA TO RENDER A

Complete Packaging Service



"SQUARE-PAK"

**BULK ICE CREAM
CONTAINER**

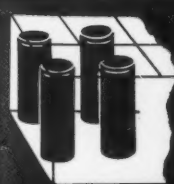
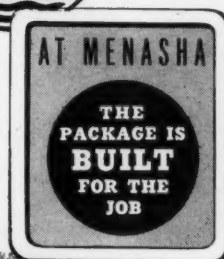


A high-grade paperboard, wax-treated for protection and sanitation is fabricated into a disposable rectangular container for bulk ice cream. Results: space is saved in the ice cream plant, on delivery trucks and in dealer cabinets where storage capacity is increased as much as 60%. It increases retail sales with no increase in cabinet investment. A comparatively simple idea but made effective by Menasha's long experience in varied food package manufacture and first-hand knowledge of the production, distribution and selling problems of the ice cream industry. The same ingenious and thoroughly practical approach to package development is available to serve you well in recommending packaging for your food products.

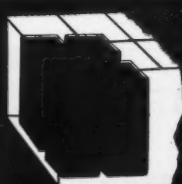
THE MENASHA PRODUCTS CO. • MENASHA, WIS.

Division of Marathon Paper Mills Company

Branch Offices: NEW YORK, CHICAGO, LOS ANGELES, SAN FRANCISCO



20
Gals.



32
Gals.

EXISTING CABINET CAPACITY INCREASED 60%

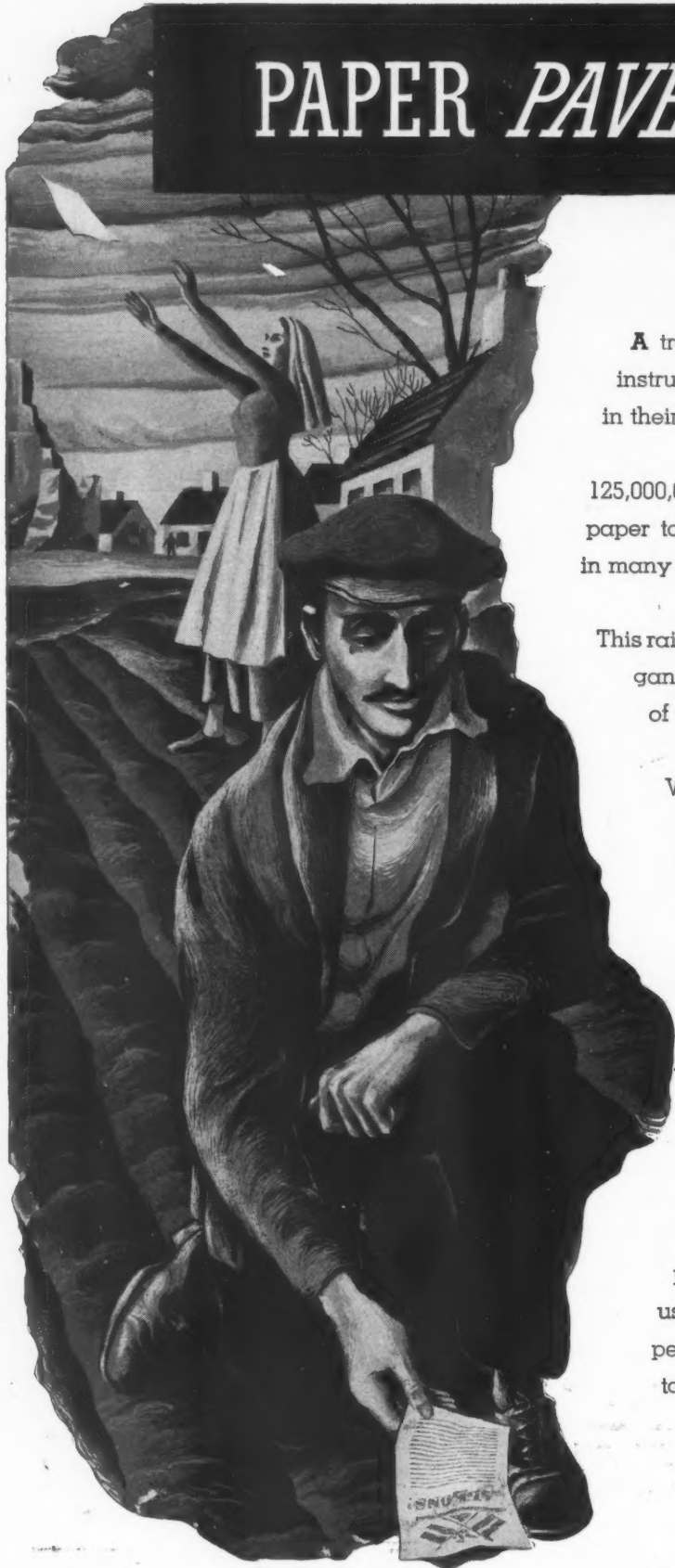


MORE FLAVORS IN TOP POSITION



GREATER VARIETY—MORE SALES

PAPER *PAVES THE WAY*



A tremendous barrage of printed facts, figures and instructions has been prepared to help our fighting men in their drive into Europe.

125,000,000 pamphlets, handbills and posters make up a paper task force long ago designed to accompany and in many cases to precede the invasion.

This rain of paper is the most carefully coordinated propaganda drive in history. It is also the greatest, in point of volume, ever undertaken.

With radios sealed, news channels stopped, underground activities curtailed, paper was commissioned to spread the word and to deliver the instructions.

But even this huge propaganda drive is but one of paper's many contributions to the war. Paper is, in fact, serving in more than 700,000 ways — on every fighting front, and on the home front.

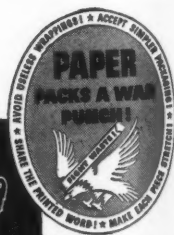
Making a thousand miles of paper a day, as we do, we have seen the war widen the circle of paper's usefulness many times over. In the broader use of paper which peace will undoubtedly make permanent, Oxford will be ready to help its customers with new and still finer products.

OXFORD PAPER COMPANY

230 Park Avenue, New York 17, N. Y.

WESTERN SALES OFFICE: 35 E. Wacker Drive, Chicago 1, Ill.

MILLS AT: Rumford, Maine; West Carrollton, Ohio



1.

Hmmm—looks like we're in for some excitement

I'll say! Sealing packages with Texcel Tape is one of the most exciting ideas in packaging history!

2.

Guess we'd better make ourselves scarce

Texcel Tape is *already* scarce. In fact, it's unobtainable, except on priority

3.

Hate to part with our last coconut—but it'll be a good investment

I'll say it'll be a good investment! Postwar packages sealed with Texcel will have more eye and "buy" appeal—will be better protected, easier to open

4.

Suppose we'll be seeing him again soon?

Sure—we'll be seeing Texcel Tape on packages again just as soon as the war is over

Texcel Tape

**CELLOPHANE TAPE—
STICKS WITH A TOUCH**

Made by Industrial Tape Corporation

A Division of Johnson & Johnson, New Brunswick, N.J.

They Know What They're Fighting For

Excerpts from prize-winning essay written by Corporal Jacob J. Zurofsky, in a War Department contest on the subject: "Why I Fight." Arrow is proud to send a bond to Corporal Zurofsky.

"I fight because my eyes are unafraid to look into other eyes...
 I fight because my ears can listen to both sides of a question...
 I fight because my mouth does not fear to utter my opinions...
 I fight because my knees kneel only to God...
 I fight because of what other people have said better than I ever could, 'certain inalienable rights,' 'right to life, liberty and the pursuit of happiness,' 'government of the people, by the people, and for the people,' 'give me liberty or give me death.'
 I fight because of memories which, if people like me do not fight, our children will never have.
 I fight because of the life I hope to live when the fighting is finished, because that life offers opportunity and security and the freedom to read and write and listen and think and talk...
 I fight because I want my children to be born into a free world, because my forefathers left me a heritage of freedom which it is my duty to pass on...
 I fight because when the freedom of one nation or one person is taken away, the rights of all nations and all people are threatened...
 I fight because 'it is better to die than live on one's knees.'"

BONDS FOR LETTERS!

TWO \$25.00 WAR BONDS WILL BE AWARDED EVERY MONTH FOR EACH LETTER PUBLISHED.

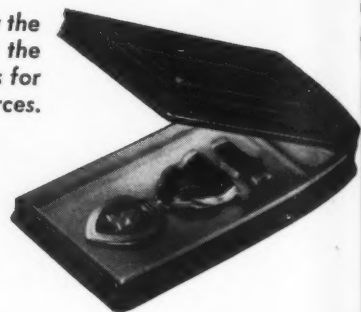
Have you received a letter from a serviceman illustrating the spirit of cooperation and understanding which unifies America's fighting men of all faiths, races, backgrounds? If so, send it to Arrow Mfg. Co. You and the writer will each receive a \$25.00 War Bond if letter is accepted for publication. All letters will be returned.

* ONE OF A SERIES OF ACTUAL STATEMENTS FROM MEN WITH THE ARMED FORCES, EXPRESSING THE DEMOCRATIC IDEAL—A POWERFUL WEAPON IN WAR, A PROMISE OF ENDURING PEACE FOR ALL MANKIND

Arrow is proud that it is today the country's largest supplier of the boxes which hold the medals for the heroes in our Armed Forces.

Arrow

BOXES AND DISPLAYS



ARROW MANUFACTURING COMPANY, INC., FIFTEENTH AND HUDSON STREETS, HOBOKEN, NEW JERSEY



Picture of a *FAST-GROWING IDEA*

You'll find Pressure-Sensitive Tape almost everywhere these war days...to seal gas capes...protect gun barrel openings...and for convenient, quick identifications of all kinds of materials and parts.

One of the most popular and useful types of this versatile tape is made of Lumarith* C.A. (cellulose acetate). Lumarith offers many advantages: extra toughness, better aging, resistance to shrinkage, grease and moisture, waterproofness, plus correct balance of rigidity and flexibility, high tensile strength and adequate elongation under even abnormal stress-strains. Lumarith has

*Reg. U.S. Pat. Off.

PRESSURE-SENSITIVE TAPE BACKED BY

surprising resistance to wear and abrasion considering its freedom from brittleness.

Lumarith-backed Pressure-Sensitive Tape—proven so versatile on the war front—has a bright future for a host of peacetime services. Celanese Celluloid Corporation, The First Name in Plastics, a division of Celanese Corporation of America, 180 Madison Avenue, New York 16, N. Y.

LUMARITH*
A Celanese Plastic



From an Official U. S. Navy Photo

Chow!

Just a barge full of chow to the soldier, but to those of us in the packaging field it represents a revolution in packaging methods.

More food per cubic foot—better protection against spoilage due to the vagaries of transportation, climate and Father Time. And withal, faster production, better identification and lowered costs.

This parade of progress is the joint accomplishment of many firms . . . and the Riegel Mills have naturally played an important part, as one of the largest manufacturers of protective packaging papers.

Our present output is limited to those closely allied to the war effort, but what we can do today is to help you plan your packaging for tomorrow. There are many new products and applications that you should know about. Why not investigate . . . now?

RIEGEL PAPER CORPORATION

342 MADISON AVENUE • NEW YORK 17, N. Y.

109



The Invasion Is On!

**Play Your Part By
Buying More War Bonds
Than Ever Before**

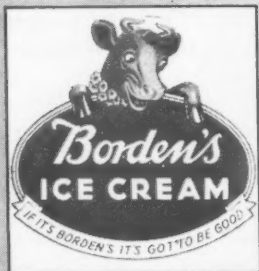
GAYLORD CONTAINER CORPORATION, General Offices: SAINT LOUIS

CORRUGATED AND SOLID FIBRE BOXES

FOLDING CARTONS... KRAFT GROCERY BAGS AND SACKS... KRAFT PAPER AND SPECIALTIES

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis
Houston • Los Angeles • Oakland • Minneapolis • Dallas • Jacksonville • Columbus • Tampa
Fort Worth • Detroit • Cincinnati • Des Moines • Oklahoma City • Portland • Greenville • St. Louis
San Antonio • Memphis • Kansas City • Milwaukee • Bogalusa • Weslaco • Hamden • Appleton

DECALCOMANIA
of Distinction



FOR TRADE MARKS



FOR WINDOWS



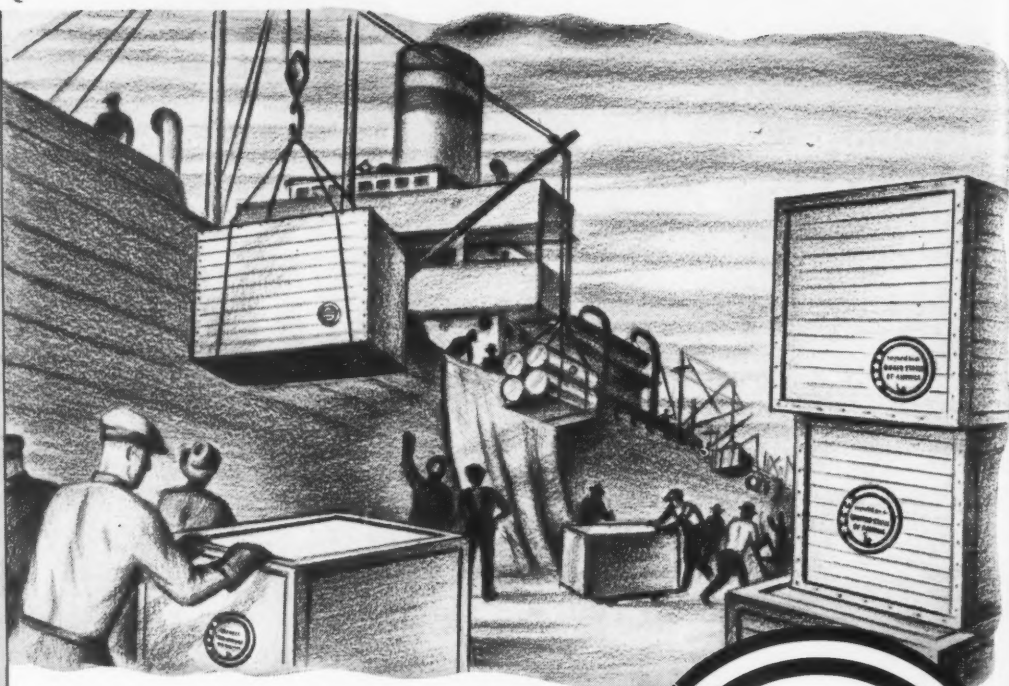
FOR TRUCKS



FOR BOTTLERS



FOR EVERY USE



**YOUR GOVERNMENT
REQUESTS YOU TO
USE THIS EMBLEM! ➔**

... on each product
... on each container
... on each shipping case



Tell the world "IT'S AMERICAN!"

Exporters are urged to co-operate in this nation wide effort—as a means toward greater war time and post-war good will and business promotion.

Available in any language, these OWI seals may be adapted to any size—and include a manufacturer's trade mark or be incorporated into his regular label.

Since 1856, Palm Fechteler & Co. have supplied the needs of many of America's leading business organizations with decalcomania for point of sale advertising such as window signs, valances, etc.

Whether the requirement is for a label, for a small perfume bottle, or a sign for the side of a 20-ton truck, our trained creative staff is equal to the occasion—even in these war years.



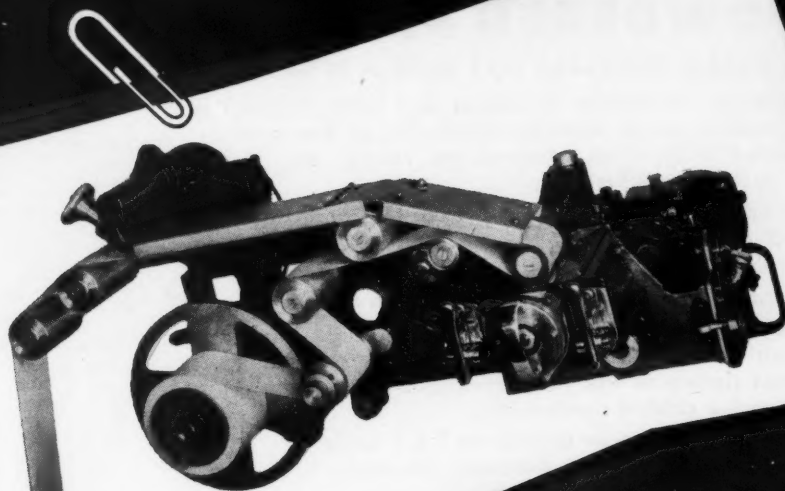
PALM, FECHTELER & CO.

Creators of Quality Decalcomania

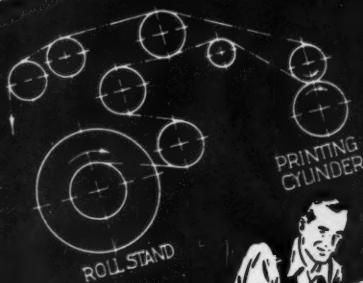
21 EAST VAN BUREN STREET
Chicago 5, Illinois

220 WEST 42nd STREET
New York 18, N. Y.

PLAN NOW FOR POST WAR TO PRINT AS YOU PACKAGE



This complete Champlain Rotogravure Printing Press can be easily attached and synchronized with practically any type of packaging equipment.



Printing is produced at almost no expense when you "PRINT AS YOU PACKAGE" with a Champlain press synchronized with your packaging machine.

There is no need for auxiliary registration controls, such as photo-electric scanners or the devices operating from perforations, when packaging and printing are combined into one continuous operation.

Printing is automatic! Operation requires no previous printing knowledge nor even an operator whose entire attention is directed toward printing.

The Patented Speedry wholly enclosed ink fountain, essential for quality automatic printing, is an exclusive feature

of these Champlain rotogravure presses. It makes possible the use of highly volatile inks which dry in a fraction of a second.

The roll of stock is unwound from a stand and travels through one or more printing units into the packaging machine. Drying takes place as soon as the ink comes into contact with the air.

A wide variety of stocks have been printed successfully by rotogravure including foil, cellophane and glassine.

Write for folder entitled "Print As You Package".



Champlain

Division of The Fred Goat Co. Inc., Est. 1893
636 ELEVENTH AVE., NEW YORK 19, N. Y.

"AUGER-VAC"

THE VACUUM-AUGER FILLING FOR POWDERED PRODUCTS

INSURES A CLEAN DUSTLESS FILL AND A TIGHT PACK

One of the later developments of Stokes and Smith Co. is the combination vacuum-auger method of filling such powders as cocoa, powdered milk, flour, dehydrated foods, etc., that require some packing to fill a container.

This new method combines the advantages of the auger feed for speed and accuracy and of the vacuum method for filling without dust.

The containers may be tin cans, glass jars or fibre but they must be air tight to hold a vacuum.

A motor driven vacuum pump creates the necessary vacuum. Correct timing to the vacuum-auger head is provided by a valve control mechanism.

The "Auger-Vac" Method may be used on the S & S Single Unit Filling Machines or the Duplex Automatic Machines. Speeds — 15 to 100 per minute.



"AUGER-VAC" EQUIPMENT
for "S & S" UNIVERSAL FILLING
MACHINES. Fully covered by U. S.
PAT. No. 2,330,862.

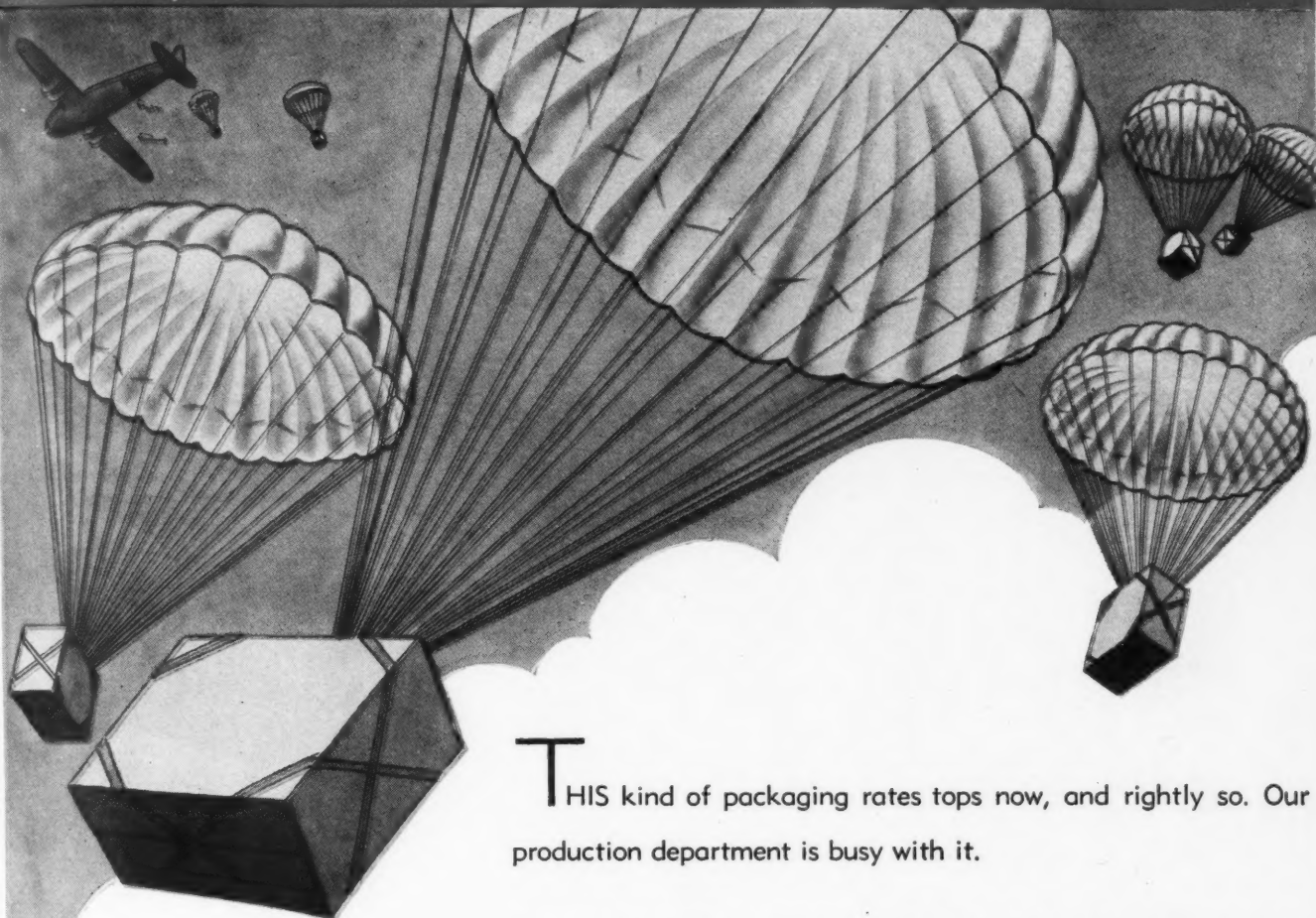
STOKES & SMITH CO

Frankford, Philadelphia 24, U. S. A.

FILLING • PACKAGING • WRAPPING MACHINES

SEND US SAMPLES OF YOUR CONTAINERS
WE WILL GIVE YOU COMPLETE INFORMATION
"BETTER MACHINES
FOR BETTER PACKAGES"

But it Won't Sell Goods



THIS kind of packaging rates tops now, and rightly so. Our production department is busy with it.

But this kind of packaging won't sell goods under normal conditions. It won't build up a steady volume of business for the time when the boys come home and want their jobs back.

It is not too soon to plan your post war packages. Old Dominion's creative and engineering staffs have most of their war planning behind them. We are now ready to translate the packaging innovations of the past few years into effective packages to meet your future needs.



OLD DOMINION BOX COMPANY

CHARLOTTE, NORTH CAROLINA
PLANTS IN NINE SOUTHERN CITIES

Folding Cartons • Set-Up Boxes • Convolute • Spiral Wound and Corrugated Containers

"THE SOUTHERN BOXMAKER WITH A NATIONAL REPUTATION"

PROTECTION — By PRINTING ON GLASS!



To Manufacturers of Pharmaceuticals, Drugs and Cosmetics

This printing is **STERILE PROOF** and **ACID-RESISTING!** And **PERMANENT!** Not even a knife blade can scratch our clean, legible ceramic printing on glass containers. *Printing can be applied in any color on bottles of any size.*

Heidt Ceramic Printing is the highly specialized and perfected development of our 79 years as workers in glass. Our facilities for fast, reliable, large-scale production, include equipment of exclusive design.

WE ALSO PRINT ON PLASTICS



Spinal anesthesia
being administered in
operating room of aircraft carrier.
—Official U. S. Navy Photo

LIFE-AIDING drugs...liquids that arrest pain... that aid the heart during the cold paralysis of shock... that fortify and immunize the body against the scourge of disease... potent and precious liquids preserved in bottles for moments of need. The modern way to safeguard the integrity of these drugs and pharmaceuticals is permanent identification of glass containers by Heidt Ceramic Printing—*printing on glass!*

Text matter applied directly to vials, ampules, jars and serum bottles provides triple protection for both manufacturer and user:

- ...**PROTECTION** from mistakes in label application.
- ...**PROTECTION** from counterfeiting.
- ...**PROTECTION** against loss of labels from bottles.

Printing is done speedily on bottles supplied to us.

Heidt GLASS WORKS
INCORPORATED

1609-15 DeKalb Avenue, Brooklyn 27, N. Y.

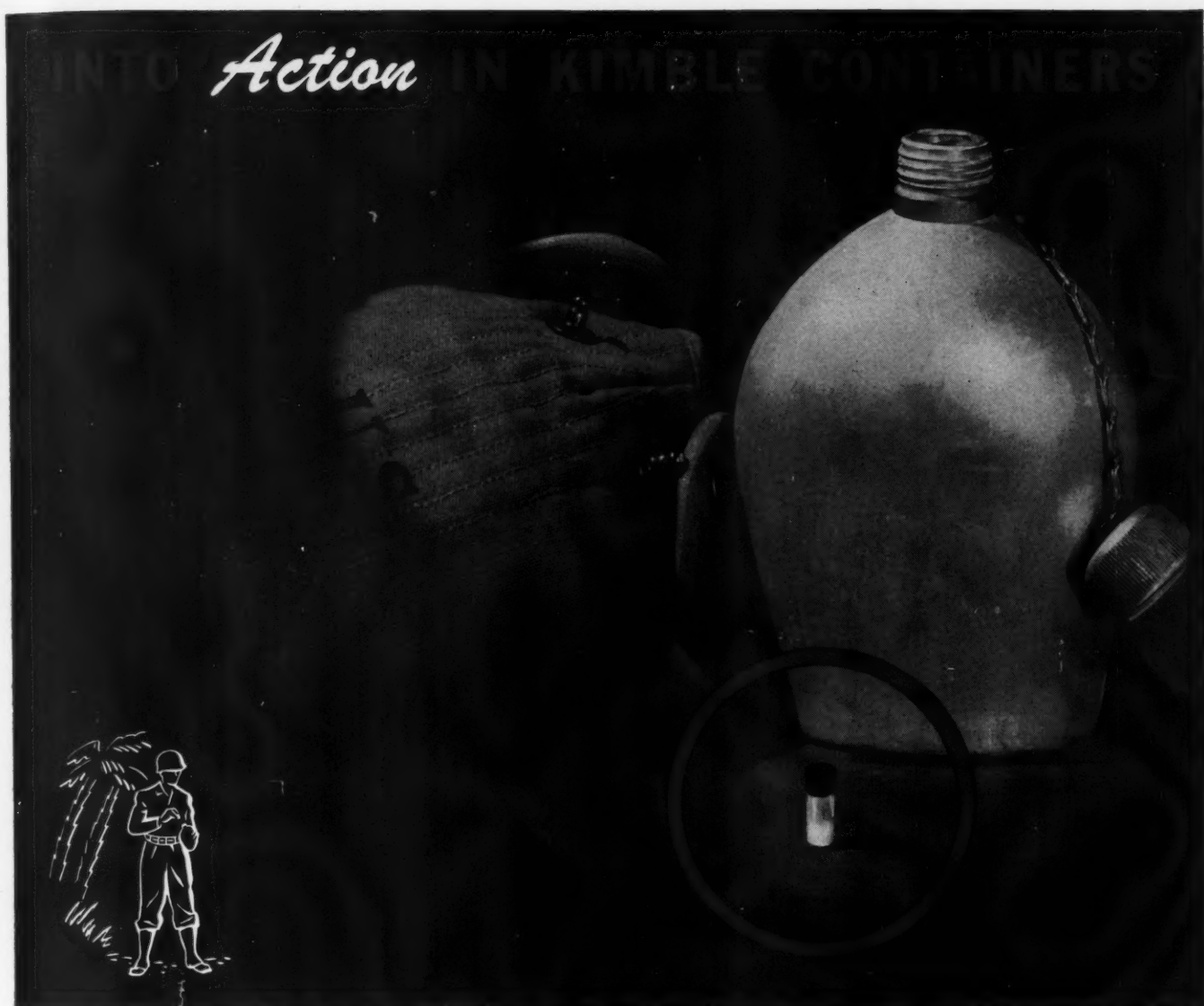
S!

esthesia
red in
rrier.
Photo

...
tify
tent
eed.
and
ners

rum
ser:

S



A tiny glass vial does a mighty big job for our fighting men. Its contents, dropped into a canteen of water from swamps, ditches or other questionable sources, kill all disease-producing organisms in the water without adding odor or taste to it. These Shell Vials

are but one of the many types of essential Kimble Glass Containers. ★ Critical drugs and pharmaceuticals... life-saving and pain-relieving materials... could never be effective without the glass containers that carry them to the point of action.

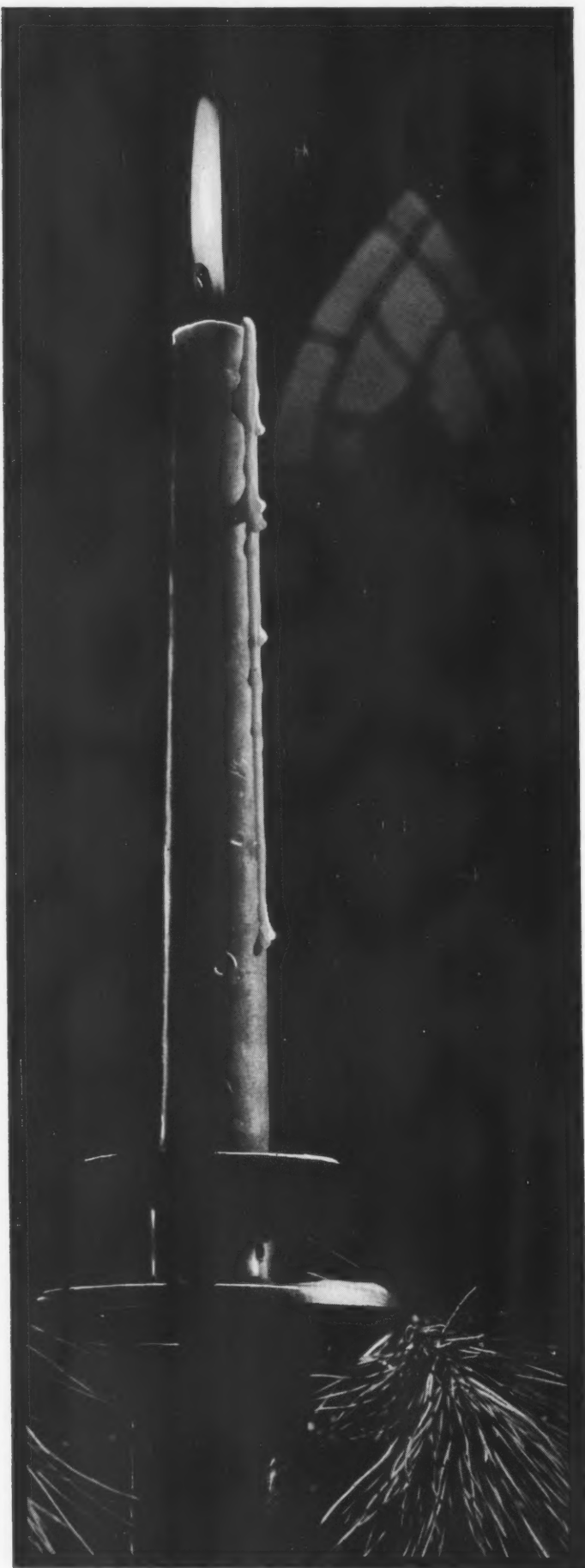
KIMBLE *Glass* CONTAINERS



For Assurance

• • • *The Visible Guarantee of Invisible Quality* • • •

KIMBLE GLASS COMPANY • • • VINELAND, N. J.
NEW YORK • CHICAGO • PHILADELPHIA • DETROIT • BOSTON • INDIANAPOLIS • SAN FRANCISCO



We know . .

Today, he is in there fighting with his life at stake. A little scared perhaps, but with courage and determination that urges him on to see it through.

In our thoughts and prayers we solemnly pledge to do our very best each day all we can to bring on final victory.

Fitchburg

PAPER COMPANY

MILLS

FITCHBURGH, MASSACHUSETTS

OFFICES

250 PARK AVE., NEW YORK CITY

11 SOUTH LASALLE ST., CHICAGO

Fitchburg Finish—printing papers and specialties



UNDERWEAR IS IMPORTANT IN PACKAGING, TOO . . .

Today's foods are *completely* dressed, even to underwear. Consider Betner's liners, for example, worn "next to the skin" of America's *finest* foods!

BETNER'S LINERS

1. Suitable for any hygroscopic food
2. Thermosealed with minimum equipment
3. Prevent leakage, seepage
4. Prevent flavor loss
5. Moisture-vapor-proof
6. Low in cost

Best proof of Betner quality is the list of processors who use Betner service. For some we supply the complete package . . . inner and outer bags. For others, liners

only. Betner's is a complete *bag* service . . . we turned out over 4 *billion* bags last year. And every bag—you could choose any, at random—would be proof of the painstaking care with which we operate.

Why not entrust us with your packaging problem? Our designers and research technicians will willingly study your requirements, offer suggestions which will obligate you in no way. Our main office is in Devon, Pa., and we're at your service the moment a letter or phone call reaches us.

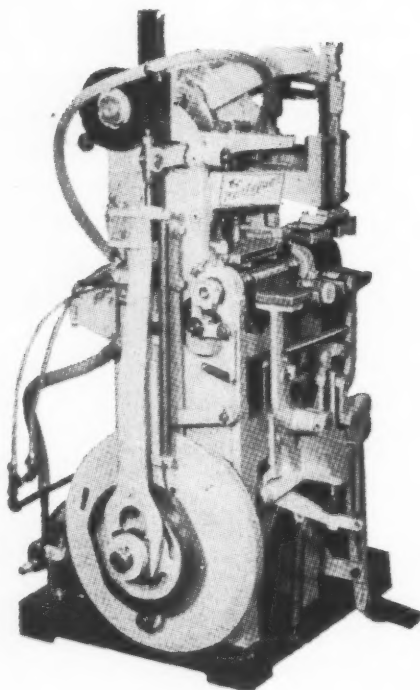
Benj C BETNER Co.
DEVON, PA.



GIRLS
GIRLS AND WOMEN
NEEDED AT
Instrument Head
GIRLS WANTED
18 THRU 50
LIGHT ASSEMBLY
GOOD
BRING
WOMEN
18 to 45
NCH WORK
ED FIRM
& WORK
ADVANCE
Have you forgotten the Skill of MECHANICAL fingers?

**LABELRITES CAN BE MADE
FOR DRUG AND COSMETIC USE
ON APPROVED ORDERS**

**—And here's how you can overcome critical
help shortages—with LABELRITES!**



Transfer the "helpers" from your labeling line to jobs where they are NEEDED. Install one of the LABELRITES and you release "repositioners" and "wipers" for other tasks, because Labelrites do the WHOLE job of labeling (not merely apply the labels). And they do it with precision registry.

It's IMPORTANT, too, because you'll reap the benefits of LABELRITE sealing or labeling for years to come. LABELRITES now in process of production assure you prompt delivery. Ask for details on the ease of change-over, and petty-cash cost of change parts which permit Labelrites to handle a range of sizes.

Solve "help" problems and reduce costs with LABELRITES!



**NEW JERSEY MACHINE
CORPORATION**

16th St. & Willow Avenue . . . Hoboken, N. J.

Chicago Office: 325 W. Huron Street



TODAY, the road we are all traveling is rough, rugged and rut-strewn. It leads, however, through the Arch of Victory to the broad highway of Tomorrow—where we shall once again be able to concentrate upon the details of perfection instead of the demand for increased production.

Solving of wartime problems has not interrupted our constant search for improvements in methods and techniques. In fact, the two have gone hand in hand. Because of this experience, the postwar years hold promise of performance that will be even better than that on which Carr-Lowrey reputation was built.

Factory and Main Office:
BALTIMORE, MD.

New York Office:
500 Fifth Avenue

Chicago Office:
1502 Merchandise Mart

**CARR-LOWREY
GLASS CO.**

Get the jump on post-war competition... with the SINGLE-USE CONTAINER

IS YOUR PACKAGE LAZY? Does it deliver your product to the retailer . . . and then stop working? Or does it attract people—stimulate sales and repeat sales? It *can* actually boost the volume of your product, you know!

It can and very likely will, if your post-war package is an individual, single-use container—a SUN TUBE UNITAINER. For the UNITAINER is really more than just a package—it's a new, successful way of merchandising a product—increasing its sales.

Just look at a few UNITAINER pre-war successes—Bromo-Seltzer, Sal Hepatica, Mistol, Vitalis, G. Washington's Coffee. Each one is actual dollars-and-cents proof that many products in multi-use packages can be bigger, better sellers in single-use containers.

War work keeps us busy today—but we are ready to discuss your post-war packaging problems now—to explain what the UNITAINER can do for you. So call or write our nearest office, today—there's no obligation, of course.

10 Reasons Why You Should Consider Unitainers For Your Post-War Package!

1. Hold individual, measured amount.
2. Assure against substitution and "counterfeiting."
3. Quickly opened with your fingernail.
4. Hermetically sealed and non-refillable.
5. Protect against light and heat.
6. Reduce loss due to leaks and breakage.
7. Smart and attractive in appearance.
8. Deliver your product in original container.
9. Handy to use and completely sanitary.
10. Offer excellent means for sampling.

Bromo-Seltzer Finds UNITAINER Key to One-Dose Market!

The Unitainer supplies Bromo-Seltzer with a package sufficiently durable and compact to carry in your pocket—yet convenient for use wherever, whenever a headache attacks. Bromo-Seltzer has found the single-use Unitainer wins new customers.



SUN TUBE UNITAINER

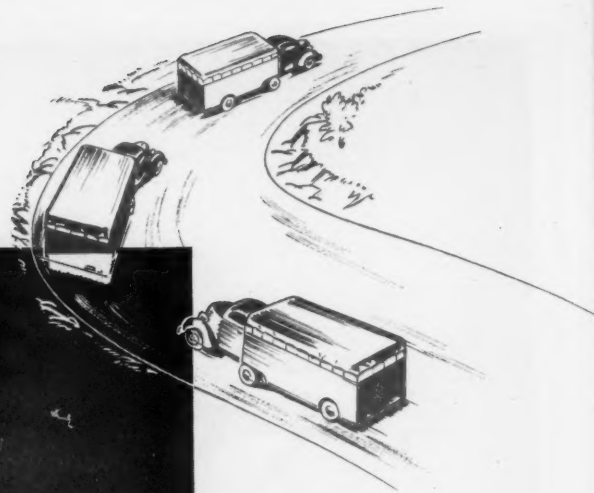
PRODUCT OF SUN TUBE CORPORATION • HILLSIDE 5, N. J.

CHICAGO 1, ILL.
James L. Coffield, Jr.
360 No. Michigan Avenue

ST. LOUIS 1, MO.
M. P. Yates
706 Chestnut Street

ST. PAUL 1, MINN.
Alexander Seymour
903 Pioneer Building

LOS ANGELES 27, CALIF.
R. G. F. Byington
1260 North Western Ave.



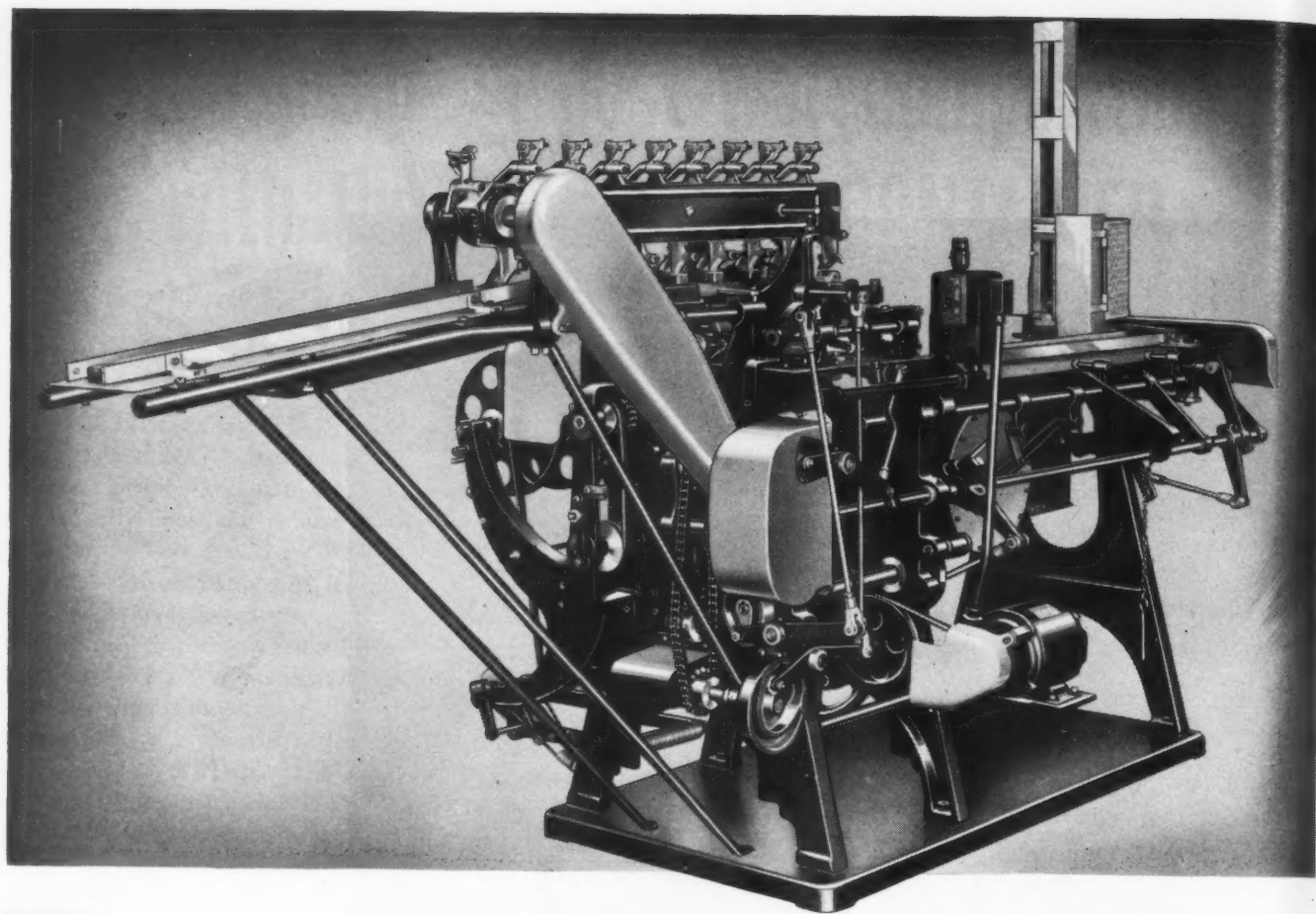
DUTY BOUND

No secret weapons these, but important weapons none the less, which have been used consistently and will be used long after Victory.

For these standardized H-A containers have played an important part in home-front health and home-front morale.

Available in twenty-two capacities.

HAZEL-ATLAS GLASS COMPANY, Wheeling, W. Va.



Reduce Wrapping Costs-Speed Up Production Add Extra Sales Appeal-with Wrap-O-Matic

Leading candy bar manufacturers and bakers are taking advantage of the tremendous savings and extra sales appeal you get with Wrap-O-Matic. Many report savings as high as 75% in wrapping-labor costs and 35% in wrapping material . . . two very important factors in today's labor and material shortage.

In addition you get high speed production—up to 120 units per minute, using glassine, cellophane, foil or any type wrapper that can be printed in rolls. Shape and texture are no obstacle, for

Wrap-O-Matic wraps soft or irregular shaped bars and biscuits with ease.

Plan now to streamline your wrapping department. Get extra sales appeal at a big savings in wrapping costs. Write today for illustrated brochure and complete details.

Over 150 leading bars, biscuits and cookies, representing over 50 large manufacturers, now have the extra sales appeal that comes from flawless Wrap-O-Matic packaging.

LYNCH

WRAP-O-MATIC DIVISION

**Manufacturing Corporation, Defiance, Ohio
U. S. A.**

Trained interviewers questioned 2,352 shoppers in Pittsburgh department stores about their postwar wishes and plans. To the question: "Would you like to select your own merchandise and serve yourself in the following departments?" the percentages of "yes" answers are shown in the charts below, which appear by courtesy of *The Pittsburgh Press* and *Sales Management*.



SELF-SERVICE WILL GROW *Faster* POSTWAR!

Note the high percentage of preference for self-service shown above. Consider the advantages to the retailer in lower clerk hire, faster service, better margins.

Then ask yourself "How does my package suit self-service conditions? Can it really sell itself?"

Does it fully protect the product?

Does it fully reveal the product?

Does it encourage display?

Does it fully tell its own selling story?

Would films or foils do a better job?

If you'd like a professional opinion, send us a sample of your present package. We'll give you an unbiased report, without obligation. Although our production facilities are crowded with war work, our research and creative staff can help you now to get set for postwar selling.

CONVERTERS — PRINTERS — LAMINATORS of FILMS and FOILS

DOBECKMUN PACKAGING SPECIALTIES

Package design—the right combination of material, shape and design to provide protection, attractiveness and utility.

Cellophane bags—from ounces to gallons; printed or plain; single or duplex; flats, squares or satchels.

"Tritect" cellophane—wax-laminated film for extra protection, in rolls, sheets or bags.

"Metalam"—heat-sealing aluminum foil permanently bonded to tough film, to give your product positive protection.

Printed films and foils—in sheets and rolls.

Laboratory testing—complete facilities for pretesting packages under all conditions of climate and service, to insure the right answer in advance.

Tritect and *Metalam* are trademarks of The Dobeckmun Company.

THE

DOBECKMUN

COMPANY

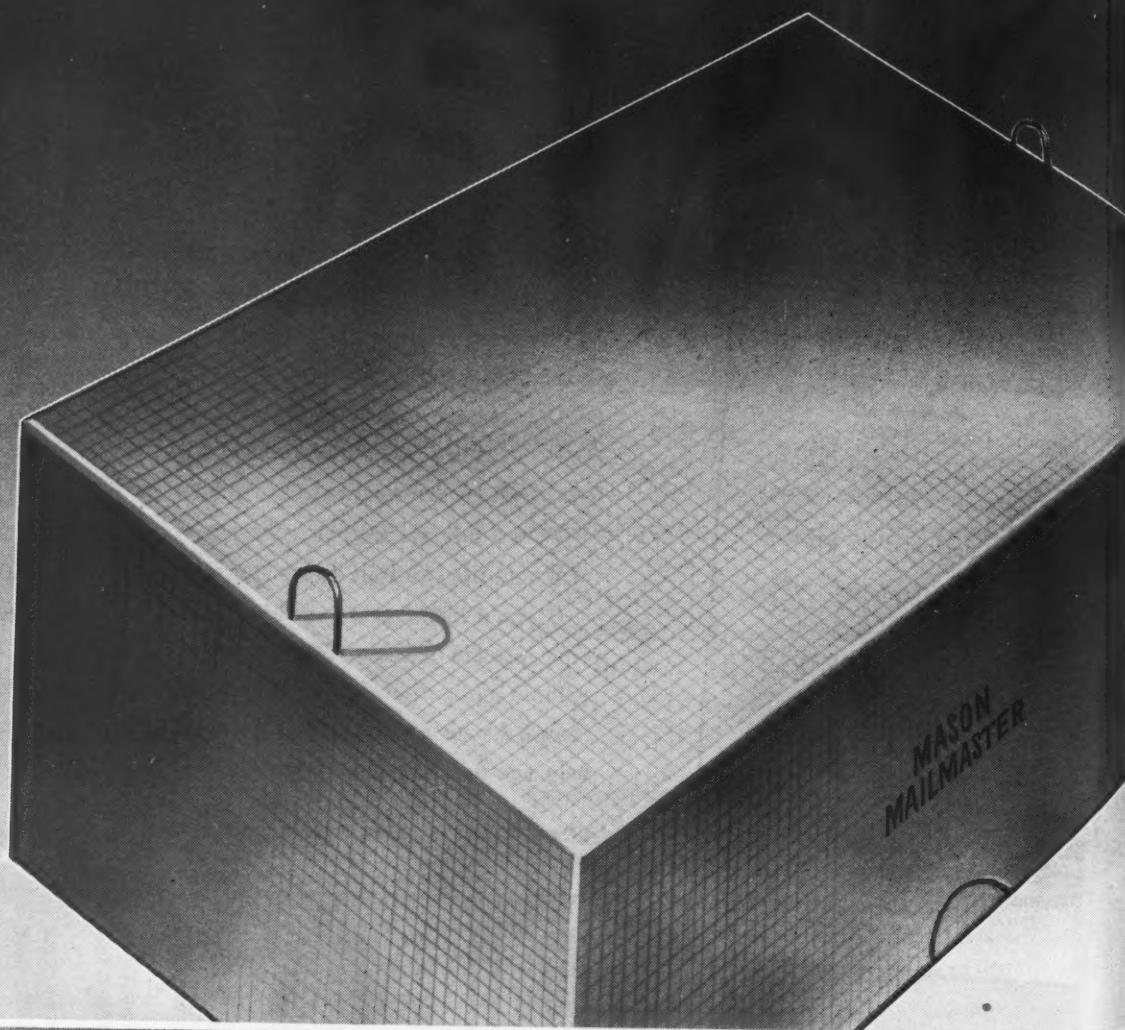
CLEVELAND 13, OHIO

WESTERN SALES HEADQUARTERS • SAN FRANCISCO

OFFICES IN NEW YORK, BOSTON, PHILADELPHIA, CHICAGO AND LOS ANGELES • REPRESENTATIVES EVERYWHERE

No Wrapping or Tying

WHEN YOU USE
A MAILMASTER



The **MASON BOX COMPANY**

ATTLEBORO FALLS, MASS.—175 5TH. AVE., NEW YORK

freshness and flavor

PROTECTED BY CEL-O-SEAL BANDS

● The freshness and flavor of Maxwell House and other popular brands of quality coffee are well guarded by CEL-O-SEAL cellulose bands.

These bands provide a durable, tight-fitting seal around the metal-saving fibreboard caps now supplied on these vacuum-sealed glass containers.

CEL-O-SEAL bands are easily applied. They hold closures securely in place. This helps retain flavor . . . guards against dust, dirt and impurities. The bands discourage tampering . . . forestall sampling and are an added protection against loss of quality.

Consider CEL-O-SEAL . . . the modern way of protecting quality products. Write for descriptive literature.

E. I. du Pont de Nemours & Co. (Inc.), "Cel-O-Seal" Section, Empire State Building, New York City 1.

Also sold by: Armstrong Cork Co., Glass & Closure Div., Lancaster, Pa.
—I. F. Schnier Co., 683 Bryant Street, San Francisco, California.



DU PONT CEL-O-SEAL BANDS



BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

JULY • 1944

39.

Annual ENCYCLOPEDIA OF PLASTICS

The annual Plastics Catalogs are complete encyclopedias of plastics. Each covers the industry during the past year.

Each contains articles on every current commercial plastic material, all methods of manufacture, types of equipment and other fundamental data.

Each edition of the Plastics Catalog is unique. There is no other book like it. In the four years of its existence it has grown in size from 476 pages to 990 pages. And the forthcoming 1945 edition is projected to be even larger.

Circulation (all paid) has risen in proportion. The 1944 edition was 16,000 copies and the 1945 edition will guarantee a minimum distribution of 17,500.

The advertisements, like the editorial contents, represent a complete cross section of the plastics industry. Several hundred advertisers utilized the space in 1944 to reach the expanding plastics market. And already, the 1945 edition has filled its advertising quota under current paper limitations.

Each year the book sells out space-wise and circulation-wise, and with the growing demand it seems likely that the 1945 circulation will be more than spoken for. Copies may now be reserved for 1945. Please accompany reservations with remittance at \$6.00 per copy.

PLASTICS CATALOGUE CORP.

122 E. 42nd STREET

NEW YORK 17, N. Y.

IT'S AN A⁺ PAPER

SHERMAN V-28

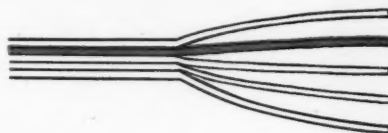
SAFER PROTECTION FOR METAL PRODUCTS

A⁺ in three important ways! A grease-resistant, non-corrosive paper built to meet exacting government specifications* for Grade-A papers PLUS EXTRA GREASEPROOFNESS: over 1800 seconds compared to the required 1200 seconds! PLUS the extra protection of a CORROSION INHIBITOR . . . more than non-corrosive, it's ANTI-corrosive! PLUS MOLD-INHIBITOR protection!

*100-15 (formerly AXS-840-1) and AN-P-12A.



5-FOLD PROTECTION



MOLD INHIBITOR
CORROSION INHIBITOR
NON-CORROSIVE KRAFT
RESIN LAMINANT
PLASTIC FILM

It takes five different kinds of protective mediums to achieve the A⁺ qualities of Sherman V-28. Each has a vital part in achieving the extra-strong, extra-safe protection of this great A⁺ paper!

MEETS GOVERNMENT SPECIFICATIONS

AN-P-12-A, 100-15: Grade A, Type II

Sherman V-28 meets or surpasses all Government Specifications for Grade-A papers, with the high strength required for the Type II group.

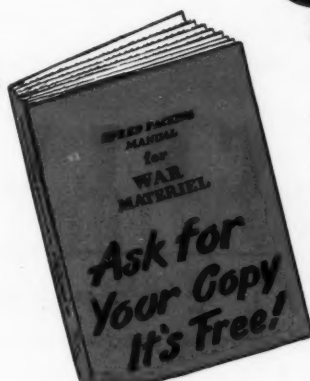


Spacer rings for the powerful Wright Whirlwind and Cyclone engines being wrapped in the protective V-28.

SHERMAN MAKES A GREAT LINE OF PROTECTIVE PAPERS

Grades A, C, BE. Types I, II and III
Corroflex, the Flexible-Cushion Wrap

The Sherman line also includes many outstanding paper products for baking and food packaging.



Sherman

PAPER PRODUCTS CORPORATION
Newton Upper Falls 64, Massachusetts
DISTRIBUTORS IN 115 MAJOR CITIES

ASK FOR FREE TRIAL

Gentlemen:

Certainly, we're interested in an A⁺ protective paper! Please send a sample roll of Sherman V-28 for free trial. Also, send a free copy of the big War-Packing Manual.

Name

Company

Street

City and State



G. I. UNIFORM for Sugar...by Mr. Cellophane

Even in the steaming jungles of the Pacific, this Army Field Ration Sugar pours freely from a special Sylvania cellophane envelope. Unquestionable proof of Sylvania's moisture-proofness! Here you see just one of the many qualities which make Sylvania cellophane

indispensable for vital wartime assignments.

Right now, much of our cellophane is at war—that means a lesser quantity for civilian use. But the developments Sylvania is making today will result in many more uses of this better cellophane in the postwar tomorrow.

SYLVANIA CELLOPHANE

SYLVANIA INDUSTRIAL CORPORATION

Manufacturers of cellophane and other cellulose products since 1929

General Sales Office: 122 E. 42nd St., New York 17, N. Y. ★ Works and Principal Office: Fredericksburg, Va.



Will the can that sprays TNT at Panzers
spray the
ants in your plants?



● It's an uncanny can. It wrecks giant tanks and other mechanized monsters. It's also used as a delayed-action land mine . . . a demolition charge . . . a booby trap.

Yet this new high explosive weapon is small and light enough to be carried in a soldier's pocket as a hand grenade!

You and this can are old friends. You, too, have used it to eliminate pests. Before the war it was a can for insecticides. After the war, it will again carry chemicals to protect your garden against insects, your clothes against moths, your children against infection.

It will carry new and better insecticides, too. (The industry is learning lots of new things in this war!) And these insecticides will come to you full strength—safely packed in cans.

To do our war job, we've developed new ideas and new skills, too. That's why, as we look ahead, we see *new and better things in Continental cans.*

POST-WAR PLANNING: We'll be glad to discuss future uses or improvements of your product or package and help in your post-war planning. Write Post-War Planning Dept., 100 E. 42nd Street, N.Y. C., or Continental Can Company of Canada, Limited, Montreal.

CONTINENTAL CAN COMPANY
NEW AND BETTER THINGS IN CONTINENTAL CANS

Awarded to Plant 78,
Chicago • Illinois



SAVE TIN CANS—HELP CAN THE AXIS



SALES POWER *for* HIRE

IN AMERICA'S NO.1 MARKET

From Indiana eastward . . . in an area of greatly increased, concentrated wealth and higher-than-ever buying power . . .

Hubbs Houses are prepared to assist mills and convertors open new outlets, increase sales, lower distribution costs and provide warehouse service in strategic locations.

There is no distributing group exactly like Hubbs Houses,—in total years of experience, in multiplicity and variety of friendly contacts and in aggressive, service-minded sales personnel.

For a DISTRIBUTORSHIP That Means
LEADERSHIP

Contact the HUBBS HOUSE Nearest You

CHARLES F. HUBBS & COMPANY
Lafayette Street Warehouse
Beekman Street Warehouse
NEW YORK, N. Y.

HUBBS & CORNING COMPANY
BALTIMORE, MD.

HUBBS & HOWE COMPANY
BUFFALO, NEW YORK

HUBBS & HASTINGS PAPER CO.
ROCHESTER, NEW YORK

CHARLES F. HUBBS & COMPANY
BRIDGEPORT, CONN.

INTERSTATE CORDAGE & PAPER CO.
PITTSBURGH, PA.

THOMAS J. NAGLE PAPER CORP.
HOLLIS, NEW YORK

HUBBS & HOWE COMPANY
CLEVELAND, OHIO

The
**HUBBS
HOUSES**

Established
1855

HOLLAND PAPER COMPANY
BUFFALO, NEW YORK

CHARLES F. HUBBS & COMPANY
TROY, NEW YORK

and in Canada

VICTORIA PAPER & TWINE CO., LTD.
TORONTO

VICTORIA PAPER & TWINE CO., LTD.
MONTREAL

VICTORIA PAPER & TWINE CO., LTD.
HALIFAX

GARDEN CITY PAPER MILLS CO., LTD.
ST. CATHARINES, ONT.

**CANADIAN VEGETABLE PARCHMENT
CO., LTD.**
MERRITTON, ONT.



★ ★ ★ PROUDLY We Fly This Flag ★ ★ ★

Our Armed Forces have done a mighty job. Holding off our enemies on two fronts they have armed and equipped for the bigger job ahead—turned from the defensive to the offensive and at this moment are delivering the tremendous blows that will bring peace.

We are humbly proud of and grateful to our Army and Navy—for the job they have done—for the skills they have demonstrated—for the vigor and speed with which they



have put those skills to effective use.

We are glad to be able to turn our peacetime skills to the undivided purpose of backing them. Our hearts swell with pride—when our Army and Navy tells us, “Well done”—and further recognize the work of the men and women of Parker by granting us the right to wear the “E” pin and fly above our factories the “E” flag—symbol of distinguished service in backing our Armed Forces.

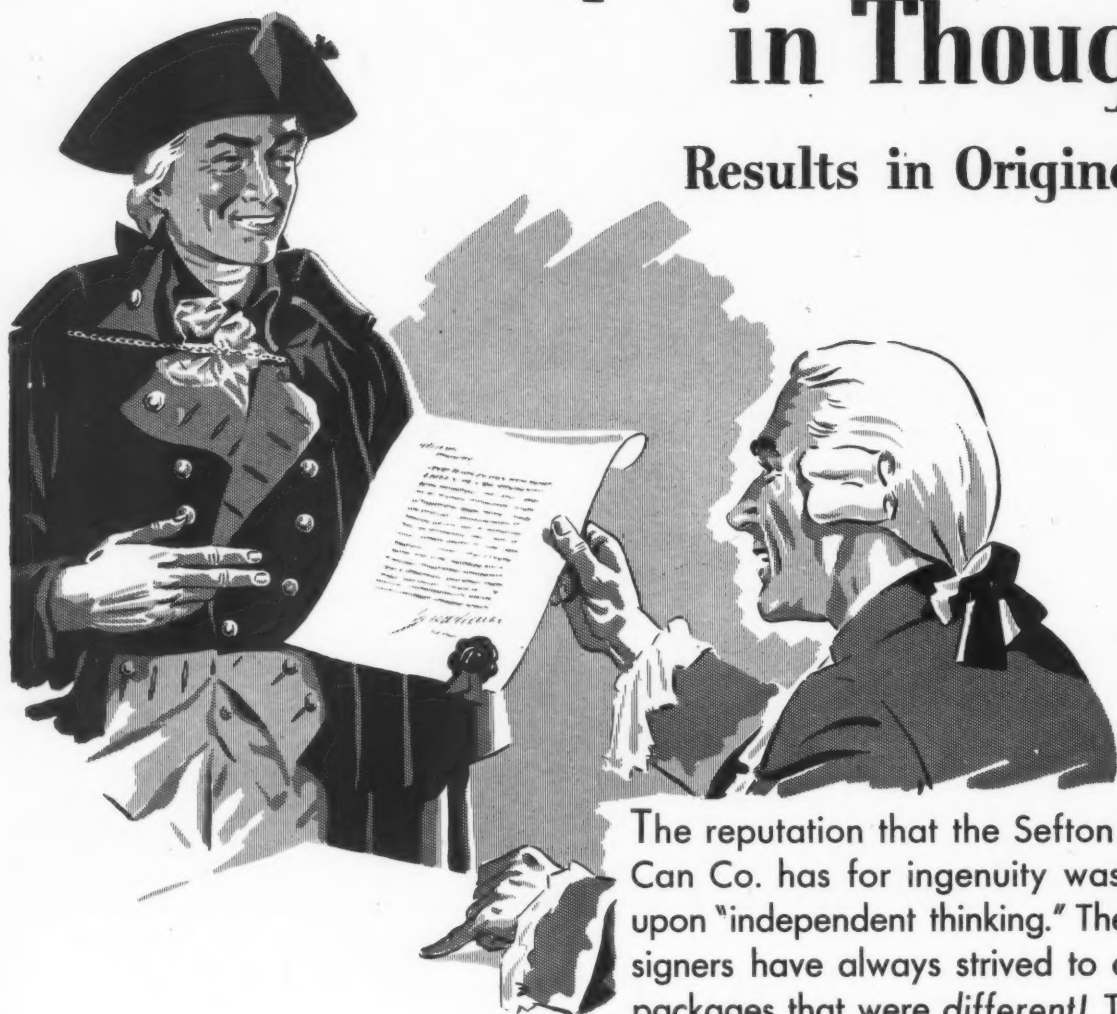
PARKER RUST PROOF COMPANY • MORENCI AND DETROIT 11, MICH.

BONDERIZING • **PARKERIZING** • **PARCO LUBRIZING**
 HOLDS PAINT TO STEEL INHIBITS RUST RETARDS WEAR

PARKER PRODUCTS CONQUER RUST

Independence in Thought

Results in Originality



The reputation that the Sefton Fibre Can Co. has for ingenuity was built upon "independent thinking." Their designers have always strived to create packages that were *different!* Today, with civilian production marking time, these master craftsmen are busy building the packages of tomorrow!



FIBRE CAN COMPANY
ST. LOUIS NEW ORLEANS

THE PACKAGE OF TOMORROW

DISTRICT OFFICES: Los Angeles San Francisco Denver Tampa Chicago Des Moines New Orleans Boston Detroit Kansas City St. Paul
Omaha New York Cincinnati Cleveland Oklahoma City Pittsburgh Memphis Nashville Dallas Houston Salt Lake City Seattle

*Will they reach
for your product?*



★ Remember when one of your jobs was selling consumers on the idea of buying your product in preference to others? ★ That problem . . . many times intensified . . . will be yours once again and soon. You will need to use every possible merchandising weapon, because competition for the patronage of Mr. and Mrs. Consumer will be severe . . . brutally so. ★ Dull, colorless, uninteresting packages won't stand much chance when that time comes. It is going to take eye appeal, dynamic attention value and selling punch to intrigue buyers into reaching for your product. ★ Now is the time to plan those new and better packages. Consult your Milprint representative.

MILPRINT Inc.

PACKAGING CONVERTERS • PRINTERS • LITHOGRAPHERS

PLANTS AT — MILWAUKEE
PHILADELPHIA • LOS ANGELES

NEW YORK • CHICAGO • ST. LOUIS
CINCINNATI • CLEVELAND • PITTSBURGH
PHOENIX • SAN FRANCISCO • SEATTLE

Printed Cellophane, Pliofilm, Glassine, Aluminum Foil, Coated and Laminated Papers in all forms including Sheet Wraps, Rolls, Pouches or Specialty Bags. • Revelation Bread Wraps, Specialty Folding and Window Cartons, Counter Displays, Simplex Pie and Cake Units.

SPECIALISTS IN DISPLAY PACKAGE DESIGN AND DEVELOPMENT

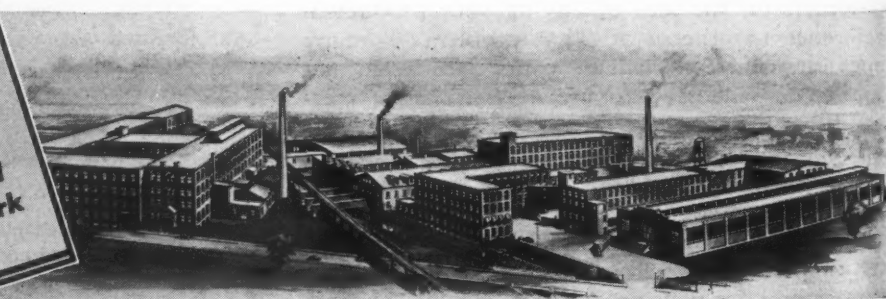
**READY TO DROP BACK OF THE ENEMY'S LINES
AMERICAN PARATROOPERS AWAIT THE SIGNAL**



What we do is *NOTHING* compared with what they do

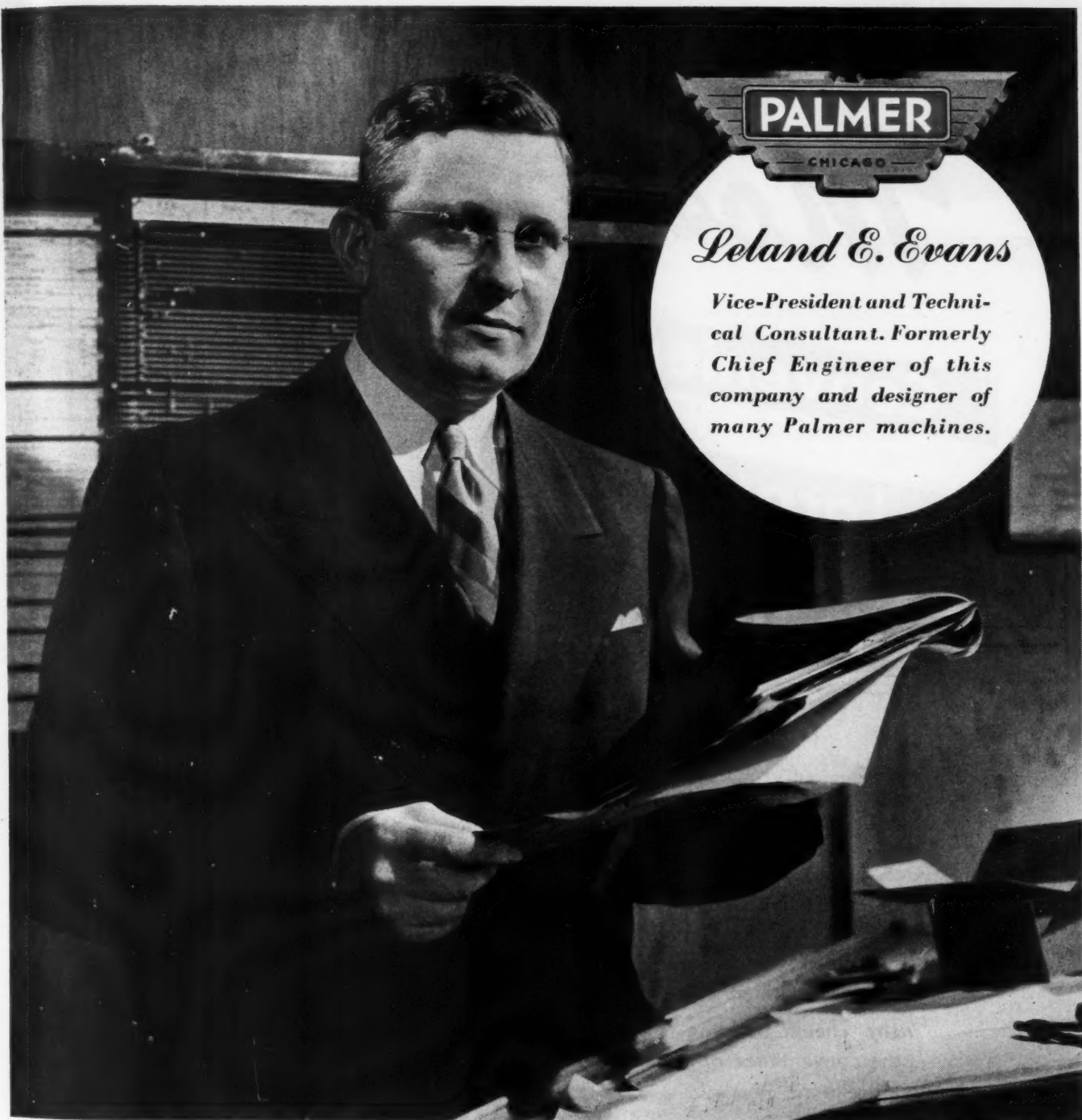
Our Waterbury Button Company Division has made most of the uniform buttons for the Army, Navy and Marines for the last six Wars—1812, 1846, 1861, 1898, 1917, 1941. All six Divisions of Waterbury Companies are working practically 100% on essential war products.

**PLASTIC MOLDING
PLASTIC
LIGHTING FIXTURES
METAL SUNDRIES
EYELETS
UNIFORM & DRESS
BUTTONS**
Our Engineers and
Designers will work
with you



WATERBURY COMPANIES, INC.

Formerly Waterbury Button Co., Est., 1812
DEPT. J, WATERBURY, CONNECTICUT



PALMER

CHICAGO

Leland E. Evans

Vice-President and Technical Consultant. Formerly Chief Engineer of this company and designer of many Palmer machines.

RELIABILITY... Every day strengthens this organization's reputation for reliability as more and more Palmer-built equipment goes to work.



★ *Developments now under way will be announced later*

FRANK D. PALMER, INC., 528 N. Western Ave., Chicago 12, Ill.

PACKAGE DEVELOPMENT LABORATORY — SPECIAL MACHINERY MANUFACTURERS

Most

Convenient

Location

In Town



OPPPOSITE GRAND CENTRAL . . . direct entrance through building to Railroad Terminal—Baltimore and Ohio Motor Coach Station, and train platforms of three subway lines . . . a 56-story "landmark" building with a tenant roster that includes many of the proudest business and professional names in America.

The Chanin Building is served by 21 high-speed elevators, and for the convenience of tenants, a 200 seat Auditorium is located on the 50th floor.

Your office requirements, be it large or small, are available for immediate or future possession.

Our architectural department, upon request and without obligation, will present plans drawn to the exact requirements of your own business or profession.

CHANIN BUILDING

A Nationally Known Address—"at New York's Front Door"

122 East 42nd Street, corner Lexington Avenue

Chanin
MANAGEMENT, INC.

KIDDER POINTERS



No. 2. Observations of trends and indications in packaging ... noted by the manufacturer of Kidder "3 Point" Presses, Kidder Press Company, Inc., Dover, N. H.

Packaging is in a world whirlpool, summarized C. W. Browne, Editor-in-Chief of "Modern Packaging" in a recent advertising club address. The function and utility of packagings are of war importance which will carry over into peacetime merchandising. The package is the symbol of individual enterprise ... it makes for consumer-awareness and the branded package fixes responsibility for the contents. Postwar markets will keep even more closely in touch with the modern consumer, his needs and desires. New movements in living will present new problems in packaging and there is always the question of which of the new war packagings will last. In the final analysis, protection, economy, convenience and appearance will be top determinants in the over-all packaging picture.

Waterproof duration-style glassine corsage bags, printed in two colors with lace effect, permit preparation of florist corsages 24 to 36 hours in advance ... but they're limited in distribution.

Paper priority ruling by WPB bringing paper cups and food containers to the use of airline passengers has brought grateful comments. Penn-Central Airlines, resuming food service, uses a cardboard lid on a fibre serving tray. All serving airlines use paper extensively for convenience and sanitation.

Paper packaging will come into its own when air cargo costs come down. CAB Chairman L. Welch Pogue predicts cut to 15¢ per ton-mile within five years of war's end.

While colored inks are manufacturer-limited to 50% of chrome pigments they used in 1941, WPB believes adequate supplies will be available for essential government and private jobs. National Association of Printing Ink Makers explains this does not restrict use of yellow inks by advertiser, publisher, printer or lithographer.

Radios equipped with facsimile attachments to automatically record as desired, including spoken word, news-photos and maps, predicted for early postwar.

Paper containers more generally replacing tin cans and glass jars is predicted editorially in Paper Industry and Paper World of April, 1944.

Terrific competition among container manufacturers in post-war is seen by government spokesmen familiar with the packaging industry. Metals will compete with each other, and with glass ... wood and containerboard will be at loggerheads ... fibre cans will be a possibility for packaging viscous substances and liquids. Practicability, cost and sales appeal will be determinants. Sales appeal of containers is claimed by some authorities as a primary foundation in our free enterprise system.

Volume in quick-frozen foods will increase in 1944, 25 to 30% over 1943, according to M. A. Williamson, publisher of Food Industries. Most significant single development is found in pre-cooked frozen food combinations now appearing. More than 60 such items ready for marketing when emergency restrictions are removed.

Necessary tissue paper wrappings for apples, pears, peaches, tomatoes and lemons has been provided by WPB at request of War Food Administration. These wrappings are needed to insure safe transportation of certain fruits and vegetables.

Fibre containers were shown to be the No. 1 problem at the first meeting of newly-formed Wholesale Drug IAC. Alcohol is now tightest of raw materials while glycerine has most strikingly improved in availability.

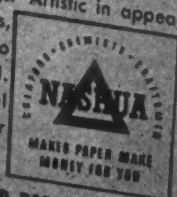
A new packaging program calls for combat troops receiving K rations in new design and color paper coverings. Breakfast will be printed in brown, dinner in blue and supper in green ... with black type on olive-drab wrappings out.

KIDDER PRESS COMPANY, INC., Printing Machinery, Dover, N. H.



WRAPPER ACHIEVEMENT OF THE MONTH

Crisp, distinctive and sparkling, executed in true register from rubber plates on a Kidder Aniliner at its own mill, to match the original art, this Christmas wrapper is one of an extensive line of holiday presentations for the set-up box trade and general holiday gift wrappings. Artistic in appeal from the design and color angles, this wrapping is on white litho stock coated at its own mill. For this singularly successful Wrapper Achievement, Kidder Press salutes



NASHUA GUMMED AND COATED PAPER COMPANY
NASHUA, NEW HAMPSHIRE

NAMES MAKE NEWS...

*These Kidder Names Will Stand for Better Quality
More Profitable Post-War Wrapper Printing*

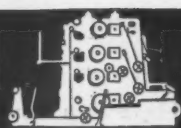
When Kidder returns to the manufacture of printing equipment — after their war “job”, which is utilizing all their equipment at present, is completed — “3 Point Press” will be resumed as the name for all Kidder machines.

For years Kidder “3 Point Presses” have been known to the paper converting industry for design and construction features which assure the three essentials of good printing — control over the paper, proper distribution of ink, accuracy of the impression.

Individual types of machines — other than the multi-color rotary letter presses (arc-type and stack-type) which Kidder has built for many years — will have their own names. The aniline-type rubber plate press will be known as the “Aniliner” — a name which will be familiar to the many firms who just before the war had purchased this press and have experienced the quality work that can be done on this heavier aniline-type press. A special narrow, 4-color rubber plate press intended primarily for cellophane, will be known as the “Celloprinter”. Kidder will also make “Unitype” gravure presses, so-called because they can be purchased a unit at a time, expanding as needs require.

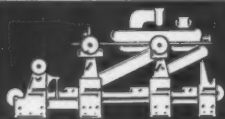
KIDDER PRESS COMPANY, INC.

Printing Machinery, DOVER, N. H.



**Multi-Color
Letter Presses**

for waxed paper, box
wrappers, etc., rewound
or sheet-delivered — up
to 72”.



**Multi-Color Unitype
Gravure Presses**

for cellophane, foil, plio-
film, etc. — rewound or
sheet-delivered — up to
36”.



**“Aniliner” Multi-Color
Rubber-Plate Presses**

for decorative papers,
cellophane, glassine, etc.
— up to 52”.



Slitters & Rewinders

for paper mill finishing
rooms and small-roll,
high-speed slitting — up
to 72”.



KIDDER

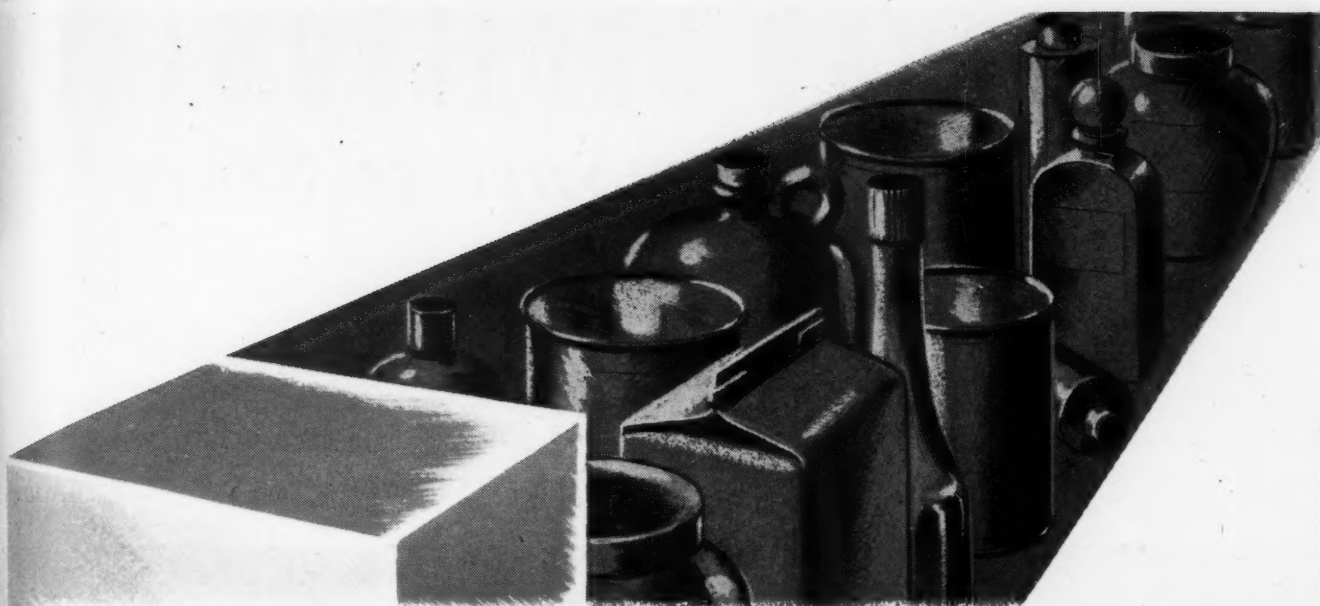
Manufacturer of
“3 Point” Presses
— so-called because
they fulfill the three
major requirements
for perfect printing.



CONTROL OVER THE PAPER

PROPER DISTRIBUTION OF INK

ACCURACY OF THE IMPRESSION



WITH MORE PACKAGING MATERIALS AVAILABLE — YOU'LL NEED MORE FOLDING CARTONS

Many things that pack best in glass jars, bottles, cans, tubes and bags require cartons, too. Why?

The war has taught us about new packaging methods and the penalty of poor designs and inadequate materials.

The rectangular type of folding carton — attractive in colorful printing on Ridgelo clay coated boxboard is a safeguard and a salesmaker.

It protects from breakage, takes less shipping room than round containers; saves on counter space; stacks efficiently; wraps easiest; directs the largest, strongest label appeal at the shopper. From maker to consumer, folding boxed products are practical, bright and distinctive.

Use Ridgelo Clay Coated Folding Boxboard to gain the most from these advantages. If you don't, your competitor probably will.

KEEP DOING YOUR SHARE IN THE WASTE PAPER CAMPAIGN

Ridgelo
CLAY COATED
REG. U. S. PAT. OFF.
BOXBOARDS

MADE AT RIDGEFIELD, N. J.
BY LOWE PAPER COMPANY

Representatives: Bradner Smith and Company and Mac Sim Bar Paper Company, Chicago • H. B. Royce, Detroit
Gordon Murphy and Norman A. Buist, Los Angeles • A. E. Kellogg, St. Louis • Philip Rudolph & Son, Inc., Philadelphia

MEYERCORD DECALCOMANIA

Stars in Sales Success Story!

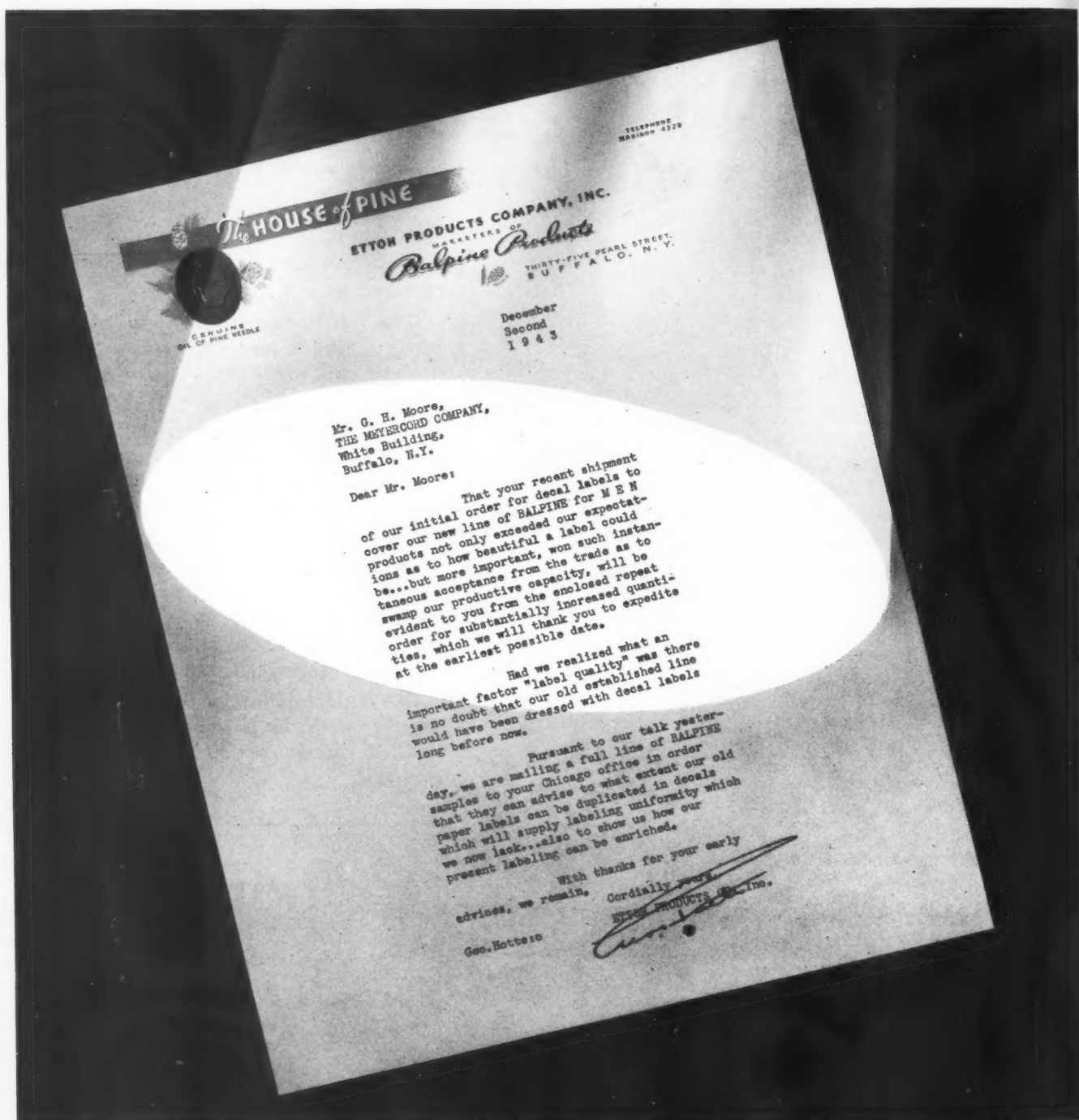
"Your decal labels . . . not only exceeded our expectations as to how beautiful a label could be . . . but more important, won such instantaneous acceptance from the trade as to swamp our productive capacity."

This excerpt from a letter to The Meyercord Co. from the Etttoh Products Company, Inc.

is the "happy ending"—or perhaps it would be more correct to say the "happy beginning"—of a true sales success story that should be of vital interest to every manufacturer and distributor of packaged products.

The story began when the Etttoh Products Company, marketers of Balpine toiletries for

Read this letter from Mr. George Hotte for the complete story of Balpine Products' success with Meyercord Decals.





These five beautiful Balpine packages vividly illustrate the beauty, eye appeal and effectiveness of Meyercord Decals for product identification and decoration.

men, was confronted with the problem of giving their products new and modern identification. Recognizing that eye appeal means *buy* appeal—that it's *personality* in packages, as in people, that's important—they set out to obtain a design that would have outstanding and *lasting* beauty. Because of the nature of the products, the new labels had to be water-proof and resistant to alcohol and acids. Paper was impractical. Other materials proved equally unsatisfactory. Finally Meyercord Decalomania engineers were called in—and the result was a Decal identification program that produced the sales story with the "happy beginning" quoted above.

Alert marketing executives, constantly on the look-out for new ideas that will increase sales and cut costs, will doubtlessly want to know *why* Meyercord Decals are such a successful—and increasingly popular—method of product identification and decoration. Here are the main reasons:

1. For beautiful appearance Meyercord Decals are the nearest approach to hand painting. They can be produced in any design, size or color.
2. They can be applied at production line speed.
3. They are inexpensive to use — both as to material cost and application.

4. They're durable, do not tear or stain and can be made resistant to acid, alcohol, alkali.

5. Meyercord Decals can be applied with equal effectiveness on glass, wood, plastic, pottery, metal—on smooth or crinkled, flat or curved surfaces. For special products or finishes Meyercord's technical staff creates special production line application techniques.

6. They're washable, do not collect dirt and keep your product name fresh and bright.

7. They're permanent "silent salesmen"—provide life-of-the-product decoration, identification and advertising.

Billions—yes, actually *billions*—of Meyercord Decals are in use throughout the world. Meyercord's designing and technical staffs are at your service, too—no obligation. For complete information on this modern method of product identification and its application to *your* product, write Department 8-6.

THE MEYERCORD CO.

World's Leading Decalomania Mfr.
5323 West Lake Street, Chicago 44, Illinois

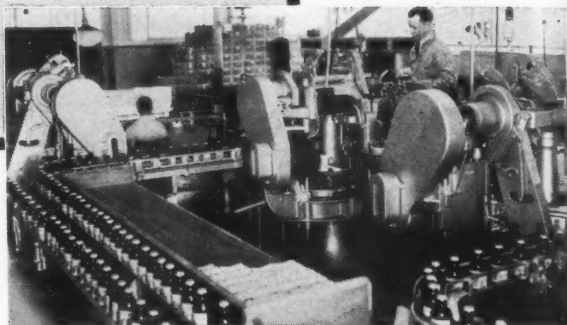
Line up your Labelers from the only complete line in the **WORLD**

How can you be sure your Labelers will fit your production and packaging line-up with the utmost efficiency and economy?

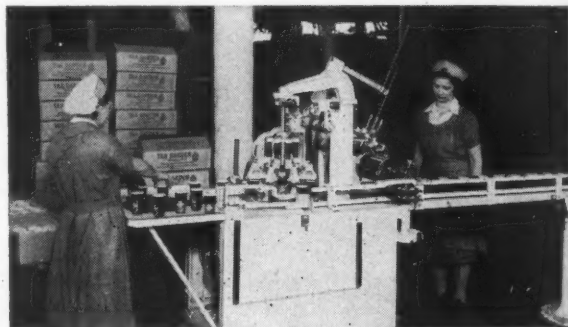
The only sure way is to check with the one manufacturer who builds every type and size of Labeler. Only then can you be certain that the Labeler recommended will be the one best Labeler for your individual needs.

The builders of WORLD Labelers have for many years devoted themselves exclusively to the design and construction of automatic and semi-automatic Labelers for every purpose. That is why you are sure to get the best labeling in the WORLD.

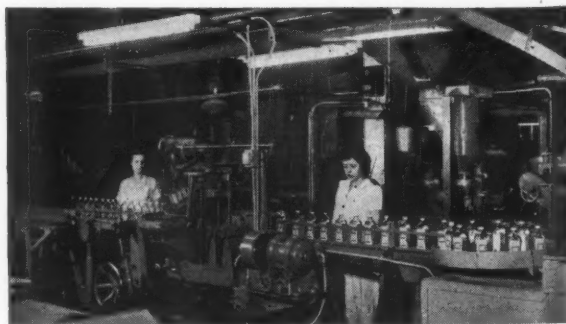
May we mail you Bulletins on any or all types of WORLD Labelers?



WORLD Automatic Rotary Labelers are relied upon by hundreds of nationally known producers of beverages and other goods packed in round bottles or jars.



WORLD Automatic Turret Labelers provide high quality labeling of smooth, fluted or fancy containers at low cost.



WORLD Automatic BEE-LINE Straightaway Labelers apply front or front and back labels and neck labels to round, square, flat, oval or panel containers of all kinds.

ECONOMIC MACHINERY COMPANY

Builders of World Automatic and Semi-Automatic Labelers for Every Purpose

Worcester, Massachusetts

NEW YORK PHILADELPHIA PITTSBURGH CHICAGO SAN FRANCISCO DENVER LOUISVILLE
SALT LAKE CITY EL PASO SEATTLE PORTLAND LONDON MONTREAL TORONTO WINNIPEG
SPOKANE VANCOUVER SYDNEY, AUSTRALIA WELLINGTON, N. Z. SAN JUAN, P. R.

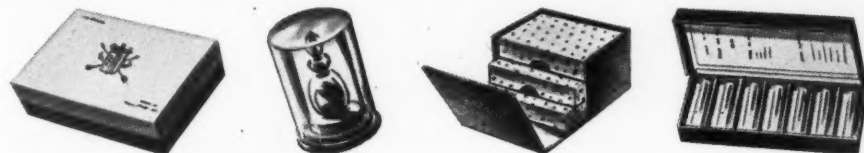


This network...for the right answer!

POST-WAR plans reached the packaging stage? Packaging war-essential products? It will pay to investigate the *set-up paper box*. Consider these advantages.

The set-up paper box is ready to load, effects faster loading and finishing. It gives far greater protection to contents, has greater beauty and sales appeal, offers wide latitude in styling, compartmenting and covering papers.

Plug into this network for quick, efficient counsel. Your nearest Master Craftsman will gladly tackle your problem. In the event that he can't make the particular box you require, he'll put you in touch with a colleague who can. Master Craftsmen are the *leaders* within the set-up paper box industry, the creative planners as well as producers. They've joined together to serve you better. You can rely on them for the kind of service you expect and deserve.



SAVE PAPER...so vital to victory!

Today there is a serious paper shortage. Uncle Sam counts on you to conserve new paper...salvage old paper. Don't place unnecessary orders.

A few types of set-up paper boxes. What kind of package does your product require?

MasterCraftsmen

OF THE SET-UP PAPER BOX INDUSTRY

Master Craftsmen OF THE SET-UP PAPER BOX INDUSTRY

BALTIMORE, MD.
Maryland Paper Box Co.

BOSTON, MASS.
Bicknell & Fuller Paper Box Co.

BROOKLYN, N. Y.
Specialty Paper Box Co.
E. J. Trum Co., Inc.

BUFFALO, N. Y.
Thoma Paper Box Co.

CHARLOTTE, N. C.
Old Dominion Box Co.

CHATTANOOGA, TENN.
Atlas Paper Box Co.

CHICAGO, ILL.
Kroeck Paper Box Co.

COLUMBUS, OHIO
Columbus Paper Box Co.

DANVERS, MASS.
Friend Paper Box Co.

DETROIT, MICH.
Stecker Paper Box Co.

FORT WAYNE, IND.
Wayne Paper Box & Printing Corp.

HOBOKEN, N. J.
Shoup-Owens, Inc.

KANSAS CITY, MO.
Crook Paper Box Co.

LOUISVILLE, KY.
Finger Paper Box Co.
Kentucky Paper Box Co.

LOS ANGELES, CAL.
C. W. Hering

MERIDEN, CONN.
Shaw Paper Box Co.

NEWARK, N. J.
Mooney & Mooney
Newark Paper Box Co.

NEW YORK, N. Y.
A. Dorfman Co.

PAWTUCKET, R. I.
Shaw Paper Box Co.

PHILADELPHIA, PA.
Datz Mfg. Co.
Walter P. Miller Co., Inc.
Edwin J. Schoettle Co.
Geo. H. Snyder, Inc.
Sprowles & Allen, Inc.

PORTLAND, ME.
Caeco Paper Box Co.

PROVIDENCE, R. I.
Hope Paper Box Co.
Taylor Paper Box Co.

ROCKFORD, ILL.
Paul Bennett Paper Boxes, Inc.

SEATTLE, WASH.
Pugot Sound Paper Box Co.
Union Paper Box Mfg. Co.

SOMERVILLE, MASS.
Consolidated Paper Box Co.

ST. LOUIS, MO.
Great Western Paper Box Co.
Moser Paper Box Co.
F. J. Schleicher Paper Box Co.
Service Paper Box Co.

UTICA, NEW YORK
Utica Box Co., Inc.

WATERTOWN, WIS.
Ira L. Henry Company

WILMINGTON, DEL.
Wilmington Paper Box Co.

TORONTO, CANADA
The Fielder Paper Box Co., Ltd.

Cooperating Suppliers: Appleton Coated Paper Company; Blackstone Glazed Paper Company; Bradner Smith & Co.; Louis Delonge & Co.; Globe Mfg. Co.; Hampden Glazed Paper & Card Co.; Hartford City Paper Co.; Hasen Paper Company; Holyoke Card & Paper Co.; Hughes & Hoffman Company; Lechman-Novasol Paper Co.; Marvellum Company; Matthias Paper Corp.; Nashua Gummed & Coated Paper Co.; Peapack Paper Co.; Plastic Coating Corp.; Racquette River Paper Co.; Stokes & Smith Co.

LOOKING INTO THE FUTURE

When you think of bottles
think of

Swindell

Machine made and hand made
glass containers for cosmetics,
drugs and beverages.

SWINDELL BROTHERS, Inc.

BALTIMORE, MARYLAND

200 FIFTH AVENUE, NEW YORK

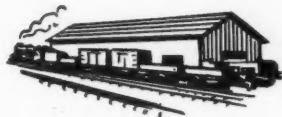
ROBERTO ORTIZ—HAVANA, CUBA



for wrapping metal parts subject to corrosion



ORDNANCE PLANT



FIELD DEPOT



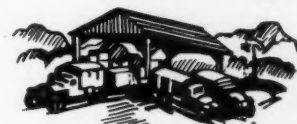
EMBARKATION PORT



OVERSEAS BASE DEPOT



SECTION DEPOT



ARMY SERVICE AREA



SUPPLY DUMP

From ordnance plant to supply dump, McLaurin-Jones ORDNANCE WRAP can be relied upon to guard machine parts and other metal products against corrosion.

ORDNANCE WRAP meets Specification AXS-840, Revision No. 1 of the Ordnance Department. It also meets Army Specifications 100-15 for greaseproof papers, besides being non-corrosive. As Grade A Type 2 stock, it is water repellent and heat sealing on the coated side (sheet is red, with coated side identified by deeper shade of red). The heat sealing coating gives a bond stronger than the paper.

Send for sample test sheets.





So we packaged **the THIRD DIMENSION**

Remember the old front parlor and the stereoscope? Science has progressed . . . the stereoscope principle is working today to help win the greatest war of all time — thanks to Vectograph, a product of Polaroid*Corporation, Cambridge, Massachusetts.

Vectograph film looks like a fuzzy double exposure, until a bomber crew, using the Polaroid Three-Dimensional Picture Spectacles, discovers that what seemed to be a sand dune is really an airplane hangar.

These valuable films are carried 'round the world in especially designed U. S. E. water- and moisture-proof envelopes that get them to their various destinations in perfect condition — ready to do the vital job for which they were conceived.

F-3

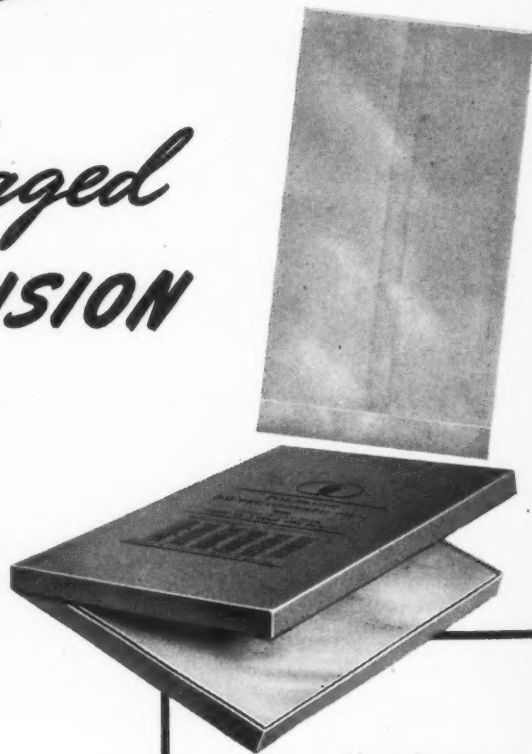
UNITED STATES ENVELOPE COMPANY

General Offices

SPRINGFIELD 2, MASSACHUSETTS

* T. M. Reg. U. S. Pat. Off.

U*S*E *protective packaging*



If you have any packaging problem, no matter how difficult, for today or tomorrow, why not consult U. S. E. specialists — right now?

Products of United States Envelope Company include WAR PRODUCT PACKAGING • TRANSPARENT CONTAINERS • ENVELOPES WRITING PAPER • LINWEAVE PAPERS • NOTE BOOKS • PAPER CUPS • TOILET TISSUE • PAPER TOWELS

A BIG NAME IN PAPER, NOT ON PAPER



spells-

QUALITY · SERVICE · DISTINCTION

Recalling Peace Time Activity — the finest purposeful papers were produced by KELLER-DORIAN. NOW IN WAR. Limitedly of course we are still serving our customers the finest quality obtainable.

KELLER-DORIAN is doing many new and interesting things with paper — producing FUNCTIONAL PAPERS with properties and qualities, having a performance record outstanding in their fields of use.

FOR POST WAR — WE PLAN NOW — NOT ONLY ON PAPER BUT IN PAPER — TO SUPPLY YOUR PACKAGING NEEDS.

REMEMBER THE NAME



C O R P O R A T I O N

516 WEST 34TH STREET · NEW YORK 1, N. Y.

Modern Plastics magazine

Dominant, Authoritative, Reliable . . .

Modern Plastics was the first magazine devoted to the subject of plastics in the United States. Its 18 years of service to the industry have established its dominant position in plastics.

It is read by the leading executives in the top firms who use plastics. These are the consumers—the market for plastics—America's most progressive industrialists. They make everything from automobiles to musical instruments, taking in both light and heavy industry.

It is read by more than 95 percent of the plastics industry. This includes molders, laminators, fabricators, extruders, raw materials manufacturers and makers of plastics machinery and tools.

All of these men rely on Modern Plastics as *the* authority. They pay \$5.00 per year for it and they read it avidly. That is why you will find among Modern Plastics' more than 400 advertisers the names of the outstanding suppliers of *everything* that is used in plastics. The leading molders, fabricators, extruders, laminators and raw materials manufacturers are steady advertisers. So are the suppliers of plastic presses, files, buffing compounds, electrical motors, electronic equipment and many, many more.

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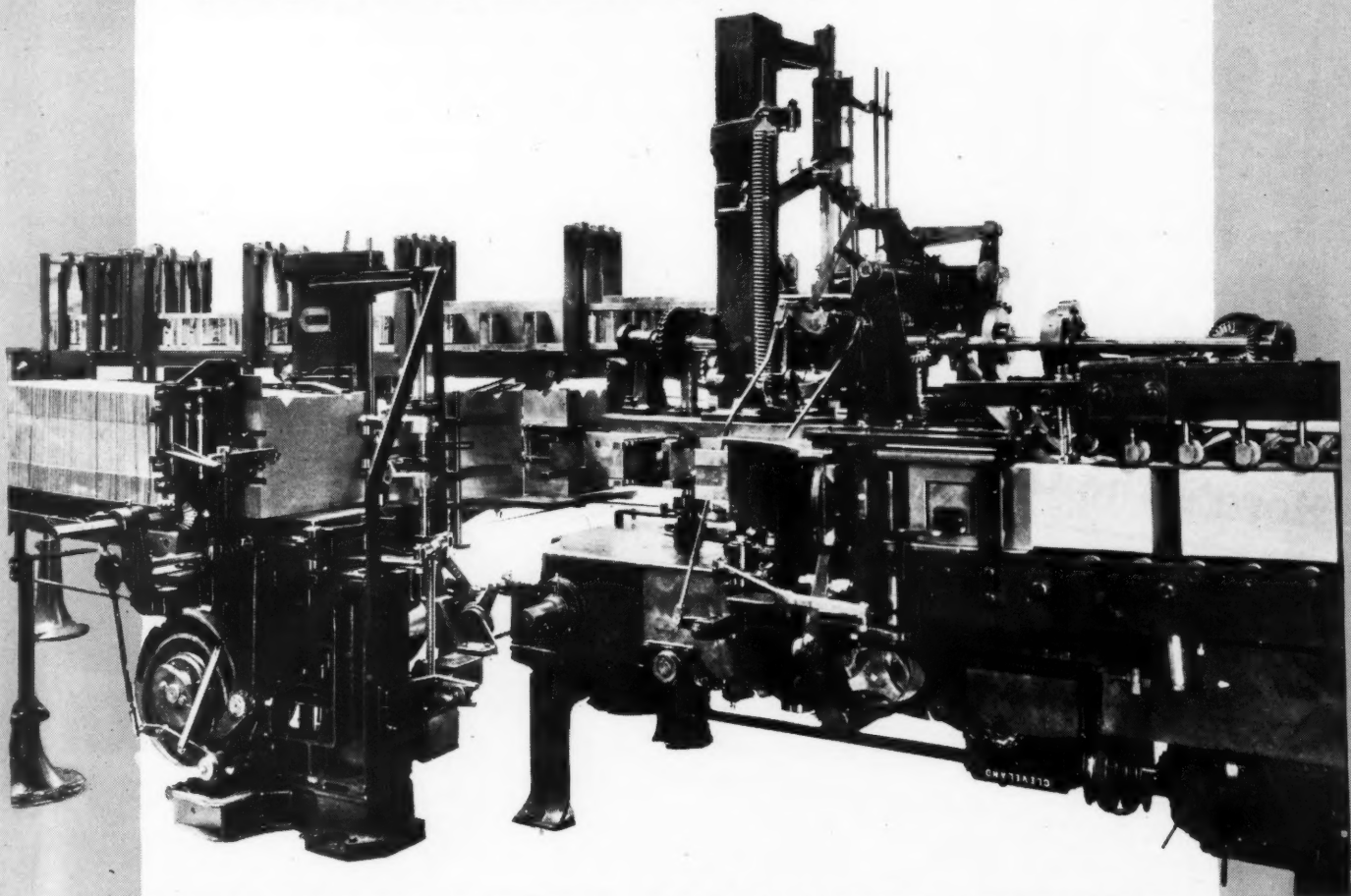
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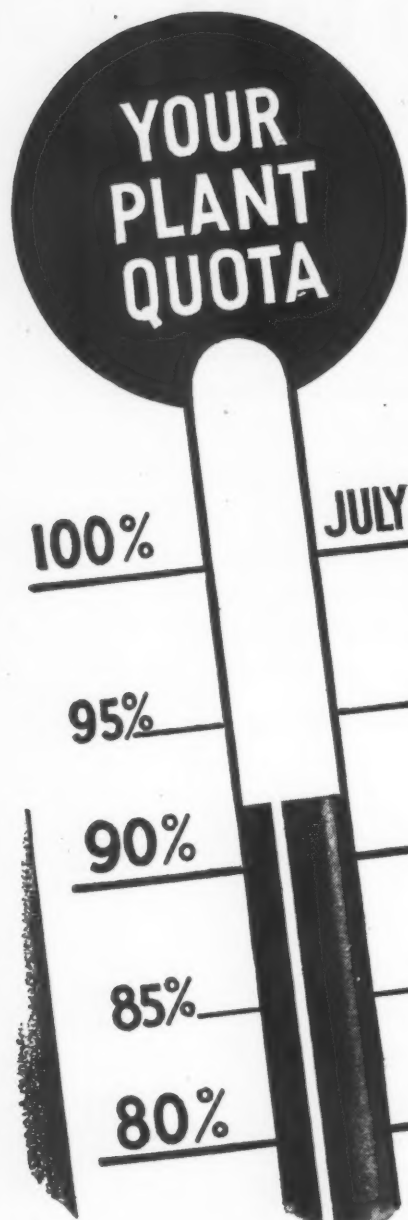
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Regular payroll deductions during the eight weekly payroll accounting periods of June and July.

30,000
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The Treasury Department acknowledges with appreciation the publication of this message by

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★ ★ This is an official U. S. Treasury advertisement—prepared under the auspices of Treasury Department and War Advertising Council. ★ ★

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None of America's daughters outranks this important war worker on the home front—Mrs. Housewife. Her thoughtful guardianship of food is a war "task" to which we all owe allegiance. Outside the home, it is also imperatively important to the Nation's program of conservation to insure invulnerable protection of food during transit and

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MODERN PACKAGING

VOLUME 17

JULY 1944

NUMBER 11

The housewife looks at packaging

by Mabel A. Rollins*

Nearly all foods that come into the home have in recent years arrived there in fairly substantial packages of some kind. With a prospective increase in self-service stores and in sales of frozen foods, more packages rather than fewer can be expected in the kitchen of the future. Fresh produce is probably the only outstanding form of food that is now packaged in the store, and even in this case attempts are being made by producers to provide something more than the usual brown paper bag. Type of package and contents in relation to method of storage and kind and amount of storage space in the home are, therefore, receiving increasing attention from home economists who work closely with homemakers and help to interpret their needs to industry.

Manufacturers of kitchen equipment are talking a good deal these days about the kitchen of the future. Cost must naturally be one of the controlling factors and because of the possibilities of reducing cost through simplification and standardization, progress can be expected along this line. However, many aspects of the problem need to be considered by all parties concerned before simplification and standardization are attempted. Are manufacturers of food containers working with designers of kitchen storage space to obtain the most satisfactory results? And are either of them aware of some of the problems that exist for the woman in the home who uses the containers and the equipment day in and day out?

Certain heights and widths of packages fit into certain places better than others. In the postwar manufacturing of freezers or refrigerators with storage compartments for frozen foods, thought should be given to the size and shape of the package that will fit the space best and allow the largest quantity to be stored at a time. The fairly standard height

* Assistant professor of Home Economics, Cornell University.

Packaging people may not agree with all the thoughts expressed in this article; may feel that adequate progress is being made toward meeting the consumer's desires. But because it is a true reflection of the consumer's mind, Modern Packaging is happy to present the article for its value to all packagers. The author is in charge of a Cornell University study of package sizes in relation to proper handling in the home.



1—Tall, opened beverage containers present a problem in many home refrigerators now in use as the one shelf with sufficient headroom is usually filled with milk bottles.

of the milk bottle probably had considerable influence in the design of the bottle shelf of refrigerators. Have the manufacturers of other beverages ever investigated the inside of home refrigerators in use? Where and how are those tall bottles to be stored? Before they are opened, the problem is relatively simple because they can repose on their sides, but if any of the contents are left over, the trouble begins. An open bottle must stand upright. But where? The one shelf with much headroom in the refrigerator is usually filled with milk bottles. If they are not yet open and have non leaking caps, they can be placed on their sides on another shelf in the refrigerator. If the cream is soon to be removed, however, this is not a desirable practice. After a few such tussles, the homemaker may think that water is better! Of course, the beverage manufacturer probably would prefer that all the



2—The taller packages are likely to be relegated to the top shelf where they have sufficient headroom. 3—If economical use is made of shelf space odd-sized packages may find their way into the floor cabinet.

product be used at one time, but since often it is not, he should realize the ill feeling that results from the difficulties encountered.

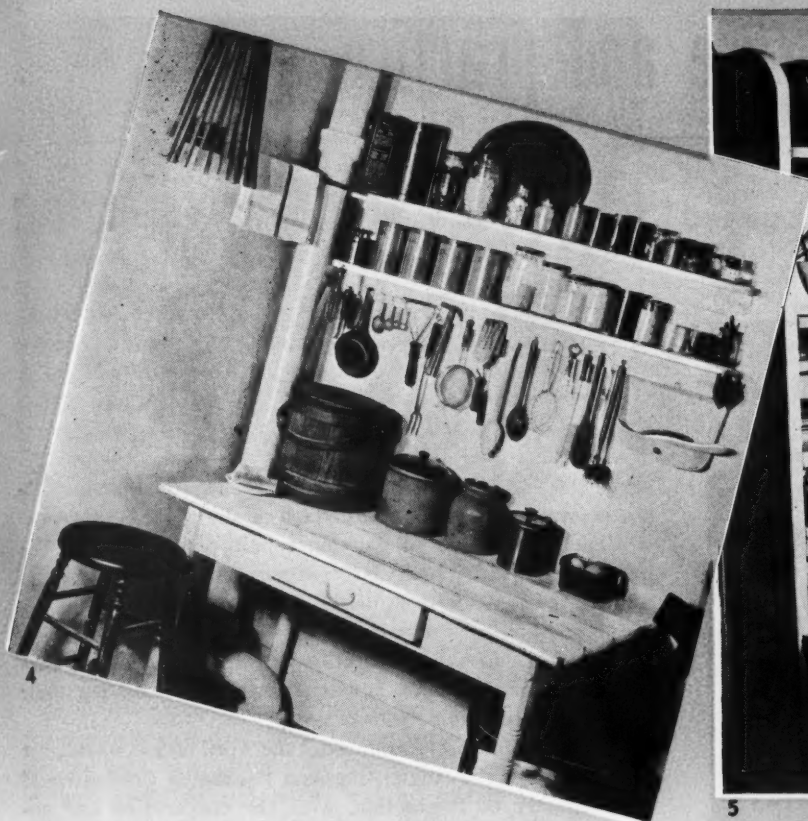
Such difficulty has not arisen in the past with kitchen cupboards, mainly because shelves in kitchen cupboards have been overly deep and have had excessive space between them. But their day is passing. They have been inconvenient for the users and wasteful of space even though they have permitted the use of all sizes and shapes of containers. A definite movement has been under way in recent years toward well-planned shelving at work areas in order that (1) the supplies and equipment for a particular task need not be gathered together from distant places each time the task is performed, (2) the worker need not reach back across several rows of things on a deep shelf to find an article at the back, (3) and need not unstack bowls or plates or supplies to find an article at the bottom—all of which are practices that no one of the manufacturers of the equipment would permit in his own factory. Have the manufacturers of those very tall boxes ever noticed how often they are placed on the very top shelf of the cupboard—in some cases the only shelf that has sufficient headroom? The same thing is done on the grocery store shelf, too.

A trend toward fewer doors on cupboards seems to be developing, because more items can be exposed for easy grasp. This trend may be accelerated by air-conditioning and dust-preventing systems. Is not the sight of a package of XYZ pancake flour in the family cupboard one of the best recommendations the product could have? Now, unless the packages are adapted to the storage space, the homemaker will when possible empty the contents into containers of better

size and shape. This practice requires just that much more handling on her part and deprives the manufacturer of prolonged advertising of his product through the period of its use in the home.

Has any investigation been made of the effect of the size of package on the ease of storing a quantity of a product? How do certain packages store best? Perhaps the retail grocer could provide information on these questions. He has had many of the same problems as the homemaker but on a larger scale. Does he have to use more space than should be sufficient and does he sometimes fail to display a manufacturer's product to the best advantage because of the many odd and varied shapes of packages? Is storage of smaller packages in larger numbers more satisfactory than fewer of the larger packages?

One development that would be desirable from the homemaker's point of view would be some uniformity in package sizes and shapes. Not only are there advantages in economy in storage, but also in appearance. Lack of uniformity in package sizes gives an air of untidiness. Different heights, different widths, different shapes result in confusion. While homemakers, like all women, and men, too, enjoy variety, they also enjoy and practice a certain amount of standardization, especially in their work areas. Not that they use the word, standardization. On the contrary they probably shudder at its sound. But they are inclined to like the idea. Think how often you hear the words "set" or "matching" in connection with kitchen equipment. And look at the containers used in the kitchens in the accompanying pictures. Notice how jars and tins of the same size and shape have been collected to give an appearance of uniformity. These are



4—Packaged goods might not be changed to other containers such as these improvised ones if they were convenient in size. 5—Housewives achieve orderly appearance by purchasing sets of uniform containers.

real homes and real homemakers have done this collecting.

Finally there is the question of the cost of the package. Distribution costs are rising sufficiently to trouble many people, and "59 cents of your dollar" is becoming a well-known, and, to some, a distressing slogan. Packaging may add to this cost, but it would not have won its way so well had it not been wanted. If the package is to be discarded as soon as it is brought into the house, the less costly it is, the better for all concerned. The consumer will want it to be of a kind that will open readily and that can be disposed of easily. She will feel less extravagant in throwing out a cheap container than an expensive one and she may even think that the product having the least pretentious container gives her the most for her money. Storekeepers and food manufacturers will wish the packages to look attractive in the stores, but if the package has served its purpose by the time it reaches the kitchen, more attention may be paid to color and less to durable materials. Disposal of useless but durable containers can be a difficult household problem.

On the other hand, if container manufacturers supply packages that preserve the qualities of the contents even when opened, and that are a good size and shape for storage in the place where they are properly stored, homemakers will use them for storage rather than empty the contents into another container. And would it not be possible that some of the cost of such containers could be reduced by some simplification in package sizes and shapes? Would this not also result in savings in manufacture and shipment, as well as storage?

While there are objections to any kind of standardization procedure and it is true that homemakers buy varied shapes and sizes of packages with little if any complaint, is it not true

that not so many years ago the same thing could be said of electric bulbs? Standardization in that instance has meant greater consumer satisfaction. The standardization of sizes of bedsprings and mattresses, also, has resulted in many economies and has not harmed the trade.

Since in postwar manufacturing there will be unusual opportunities for improvements, those who have a stake in the home, whether food manufacturer, container manufacturer, equipment manufacturer, home economist, or homemaker, should combine forces in an effort to come as close as possible to meeting consumers' needs.

6—Uniformity in containers is possible but it is not always attained. Soap packages on right have the same dimensions and contents. Detergents at left are not uniform.



British war packing code and practice

In drafting a "Packaging Code," the British Standards Institution has made use of the U. S. Army-Navy Specification for Packing and Packaging for Overseas Shipment.

Britain, too, has learned the lesson that productive out-

put of industry is of little or no value unless the goods can be delivered in a usable condition and this, it is stated, "is the reason for the present drive to make Britain 'packaging conscious.'"

"The new packaging code for the first time in Britain defines and sets out in detail the standards of sound packaging practice," says an article in the April, 1944, issue of *Production and Engineering Bulletin*, published by the British Ministry of Labour and National Service and the Ministry of Production.

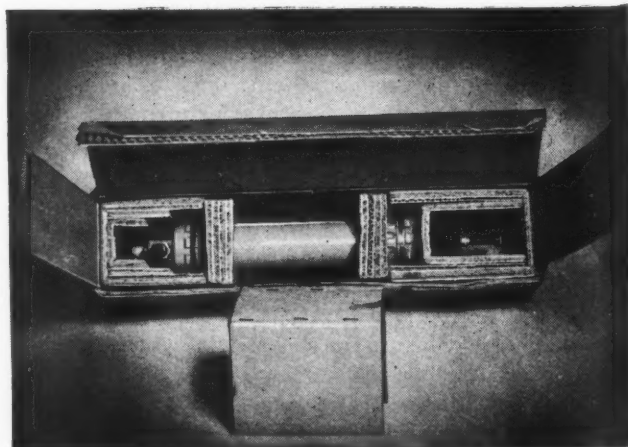
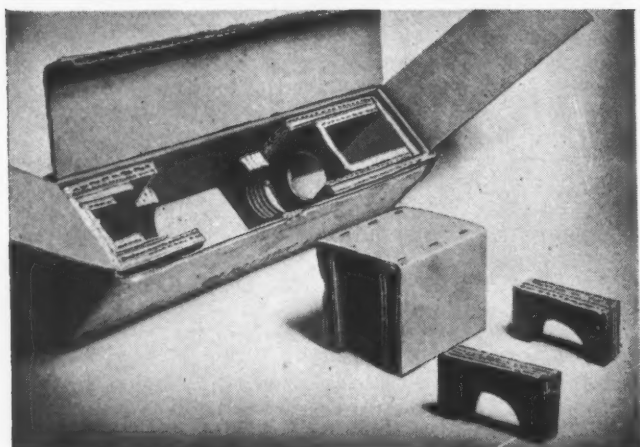
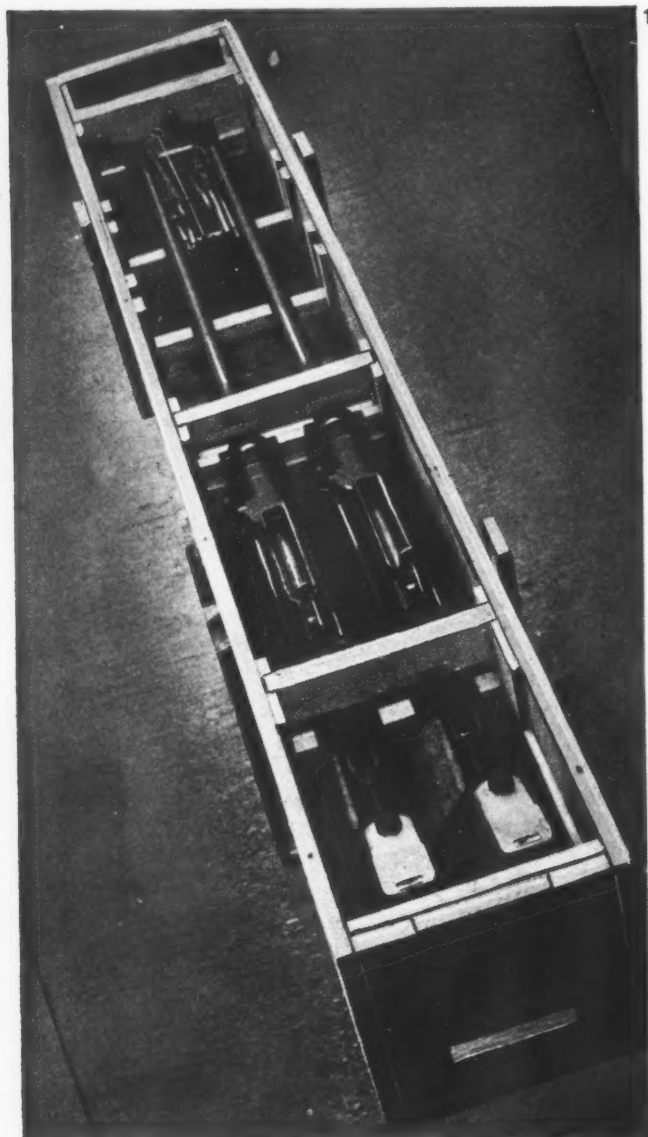
In the March issue of the same publication considerable space was devoted to methods used by the Royal Army Ordnance Corps in prepacking repair parts for front-line field service with particular reference to the system of employing village labor in what are known as "outworking centers."

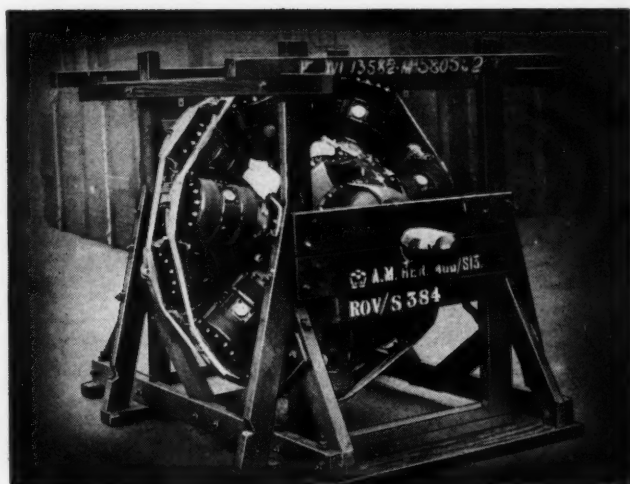
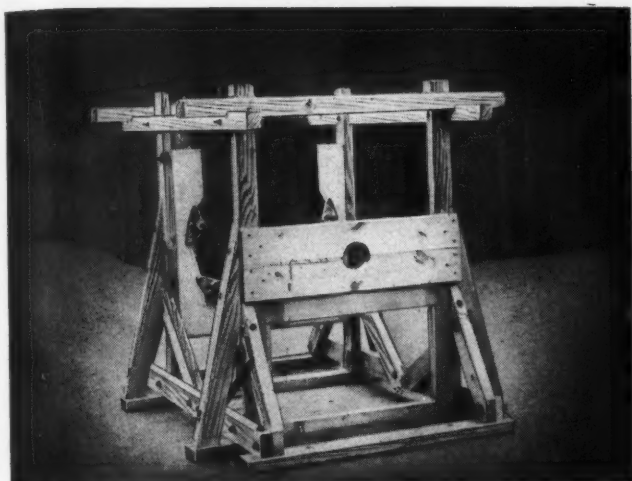
An outline of these activities will give American manufacturers some idea of how the British are solving their problems of packaging war materials.

"The code has been produced," the April article stated, "at the request of the Anglo-American Packaging Committee of the Ministry of Production, with the cooperation and approval of the Admiralty, Air Ministry, Board of Trade, Department of Scientific and Industrial Research, G. P. O., H. M. Stationery Office, War Office and the Ministries of Aircraft Production, Food, Home Security, Supply, War Transport and Works. Forty-eight trade organizations have also assisted in the work of compilation."

The Code was prepared primarily as a guide to officers and personnel of government departments in determining the right type of package for any particular commodity, but is expected to be of practical value to industry now and in the future as a possible basis for postwar publication.

1—Anti-tank rifles packed and braced in a nailed wooden case. 2—The prevention of all possibility of movement is an essential feature of a good package. For this purpose it is frequently necessary to provide internal fittings to ensure the perfect "bedding-in" of the unit. Shown at left is an example, taken from the code, of a fibre-board container with specially designed fittings. 3—It is planned for the aircraft component shown packed.





4 and 5—A method of packing an aircraft engine, as illustrated in the code. Engine is mounted and bolted in stand (shown empty, left); when completed the whole stand is bolted to the floor of the outer case. All illustrations used have been reproduced by permission from the Packaging Code, and copyright is reserved.

In addition to inclusion of U. S. Specs, the British standard recommendations deal, in addition, with packing for home use and have been affected by the shortage in Great Britain of both materials and labor, and by certain fundamental differences in packaging practice in Britain and the U. S. A.

An outline of what is included in the code and of what is attempted to accomplish by it is explained in the following quotations from the *Bulletin*:

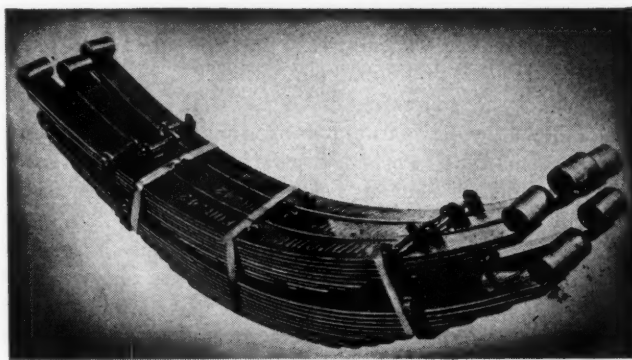
"The general specifications give an outline of the types of containers and materials which will be demanded by government departments for all ordinary purposes, but it is not intended that the specifications shall supersede existing Departmental specifications or approved container designs, except when service conditions indicate that an improvement can be made by following the Code. It is emphasized, however, that any departure from existing Departmental specifications must be authorized by the Department concerned.

"The materials specified are those recommended as being the minima necessary for efficient packaging, having regard to their availability in wartime conditions. For makers of containers and materials, and for contractors immediately concerned with actual packing, the information is designed to insure that they make or pack to the accepted standards.

"Packing of commodities at the point of manufacture is strongly advocated in the Code, and it is stressed that the fewer times a commodity is handled prior to packing the less liable it is to damage. The best moment to pack is, therefore, immediately after the final productive operation, and handling and transport in a bare condition should be avoided to the greatest possible extent."

"The packing, by contractors, of stores in the quantities and type of package specified by the Government Purchasing Department is usually known as "packing at works." It has many advantages, chief of which are economy in handling, reduction in damage potential, and saving of transport and labor at the receiving points. It permits speedy issue of stores from Government Depots by virtue of the fact that they are ready for issue at the moment of receipt—this is a vital factor for military purposes—and saves valuable storage space at the Depots by eliminating large areas normally used as packing bays and for the warehousing of empty packages.

"It is not merely a matter of transferring the equivalent



6—Motor vehicle springs are usually packed in this way, making use of flat, tensional steel strapping, cold or hot-rolled, with the edges suitably treated.

labor and space from the Depots to the factories. Even under existing conditions stores must be packed to some extent at the factory for dispatch. Experience shows that organized packing as near as possible to the production bench is more economical as well as being safer and more efficient. . . .

"Side by side with packing to avoid damage caused by buffeting during transit there are other considerations, such as damage which might result from corrosion, mildew, fire, fragility, seepage, moisture and climatic conditions (en route as well as at destination). Other factors which also govern the type of package are the value of the article packed, the possibility of securing a replacement (i.e., whether the article is mass-produced or specially constructed), the necessity for precautions against pilfering, the quantity and the weight.

"With particular reference to weight it is sound practice to plan packages so that they can be handled by one or two men. It is advisable, wherever possible, and particularly for operational use, that packs of not more than 80 lb. be used, so that the container may be handled by one man.* Many commodities may be of such size and weight as to preclude this, but where there are parts capable of easy detachment and subsequent re-assembly, or where a large item can be broken

* In tropical conditions, the enervating effect of climate severely limits the load which a man can carry, and it has been found that 40 lb. is the average limit. In some circumstances it is as low as 25 lb.



7



8

7—With port installations rendered unusable, Army stores have to be manhandled. Prepacking greatly assists in safe delivery to front lines. 8—Rough sea voyage, manhandling in demolished harbors and other causes may lead to this. Without prepacking and preservation these stores might have been lost to fighting forces.

down from a large and unwieldy package into two or more handier sizes, it is preferable to do so.

"There is no guarantee, of course, that facilities will be available at the destination point for anything in the nature of bulky packages. Ports of discharge may have been sabotaged or 'blitzed,' and all mechanical unloading apparatus put out of action. The ships themselves may also have suffered from air bombardments, and time limits may have to be imposed (as, for instance, to speed up the turn-round of a convoy). These, and many other factors, will have a direct influence on the manner in which a package may be handled at its destination. They all contribute to the impossibility of ensuring the careful treatment of all packages during shipment and unloading.

"The inescapable conclusion is that sound packing and safe carriage are as important as productive efficiency, and should be considered as an integral part of production, not as a separate and detached problem. The aim of the Code is to provide information which will materially assist in ensuring the delivery of the goods to the user in the same condition as they leave the factory.

"One of the principal features of the Code is Section 2, which is devoted to the choice of containers. Under the heading of 'Factors to be Considered' it states that in deciding on the type of packing to be adopted the following points must be considered:

1. *Destination.* (a) Domestic or overseas. (b) Whether or not for operational use.
2. *Kind of transportation and conditions of handling and storage.* (a) Road, rail, sea or air. (b) Probable number of loadings and unloadings. (c) If for operational use, probable conditions of unloading and storage.
3. *Climatic conditions of journey and usage.* (a) Probable limits of temperature. (b) Humidity and dew conditions. (c) Whether likely to be exposed to heavy rainfall.
4. *Conditions of distribution and use.* (a) Whether for distribution direct to user in bulk container, or whether intermediate containers are required for a number of unit containers for distribution to depots. (b) Whether container is required for storage of article when in use.

5. *Character of article or commodity to be packed.* (a) Size, shape and weight, and number of units to be packed. On these conditions will depend the type of container or package to be used, if any. (b) Shape, fragility, surface finish, corrodibility, etc., of the article. On these factors depend the kind of interior packing and the protection required.

"With these considerations in mind two tables have been prepared as guides to the choice of outer containers and interior packing. The various articles and commodities to be shipped have been divided into 22 classes, and notes appended in certain instances as a further guide in making the right choice of containers and packing.

"In discussing methods of interior packing the Code recommends nine different methods, viz.: (a) Bracing and blocking; (b) Bolting; (c) Flotation of heavy articles; (d) Flotation of relatively light and fragile articles; (e) Items packed in cartons or cans; (f) Items of heavy density packed loose; (g) Cushioning to protect surfaces; (h) Reinforcing or overpacking for extra protection; and (i) Corrosion prevention.

"Methods of packaging for overseas shipment are dealt with in Section 4 of the Code, which provides general rules for the wrapping of various articles, methods of arrangement, lining, and sealing of containers.

"Dealing with the question of the handling of containers during transport and storage, Section 5 points out that the greatest care should be exercised in opening and closing all types of packages. All materials used in packaging are in short supply. They are just as much munitions of war as steel and other products, and every effort should be made to conserve and return them for further use. Besides, careless opening and closing may also cause damage to the contents of the container.

"Manufacturers will find in this section some useful recommendations regarding methods of handling during transport, and attention is drawn to methods and practices which should be avoided as likely to cause damage.

"Under the heading of weight and space limitations in transportation it is commented that delivery is sometimes delayed when containers exceed the limiting weight or dimensions imposed by equipment normally used in handling and



9



10

9—Conditions under which Army has to work. 10—Forward Ordnance depot in Mediterranean Zone with pre-packed stores in improvised bins. 11—Midland firm uses a conveyor in prepacking section. Components are dipped in preservative. 12—Device for spraying of preservative. These installations had not yet been completed.

transportation. When packages exceeding the limiting weight have to be handled, special equipment must be provided on the average cargo ship, or at the ports of embarkation and discharge. Such equipment is frequently not available, or alternatively, is expensive to obtain. In wartime it is important that all cargo shall be capable of being handled by the ship's own equipment, otherwise ships have to be diverted to other than the most suitable ports in order that special loading or unloading equipment may be used. Delays thus occasioned may lead to the loss or the destruction of the ship and its cargo, quite apart from the time that is always lost in the process.

"For rail transportation much useful information is provided as to the dimensions and carrying capacity of the most generally available freight stock cars and wagons on British railways.

"When goods have to be sent by air, lightness, strength, dimension limits and weather resistance all have to be carefully considered. Air consignments are generally hand loaded, and packages should be kept as small and as light as possible. A table of maximum lengths is provided for guidance.

"The subsequent Sections 6 to 15 (inclusive) are devoted to

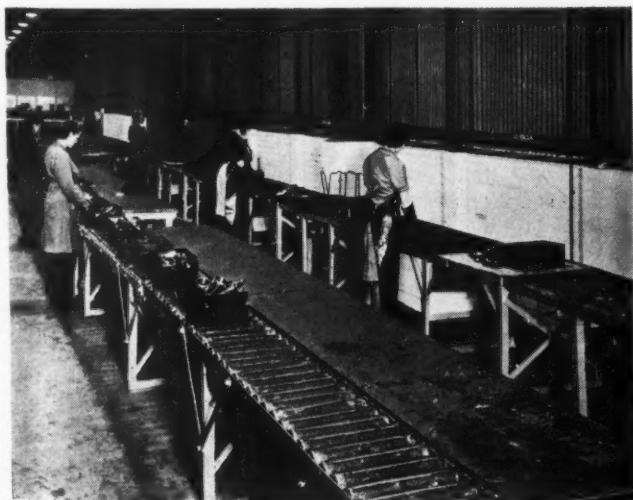
marking and identification, and the different types of wrapping materials and containers. Advice is given on the selection and use of the material or container, specifications, and methods of testing. The ground covered by these sections is as follows: Marking and identification; paper wrappers and containers, including cellulose film; wooden containers; textile bags, sacks and wrappings; metal containers; cushioning materials; cordage; closing and sealing tapes and tensional steel strapping. The information contained in each section regarding methods of test is supplemented by Section 16, which describes tests for paper and board, cellulose film, wood, tensional steel strapping, felt and sealing tapes."

Two sections of the Code devoted to "Corrosion Prevention" and "Glass Containers" will be published later.

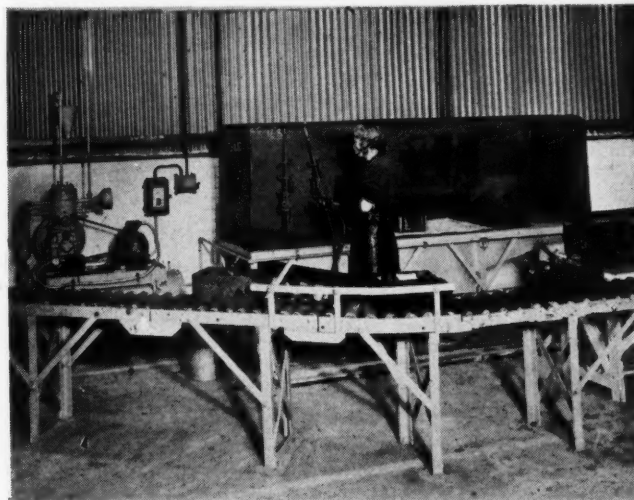
Because military campaigns can be won or lost by the speed with which field repair organizations bring damaged weapons and vehicles back into front-line service, the Royal Army Ordnance Corps are now preserving and prepacking some 700,000 or more different repair parts in small cartons and boxes for delivery unopened to the most forward ordnance units.

The work of identification, preservation and packing is carried out at the point of manufacture to save unnecessary

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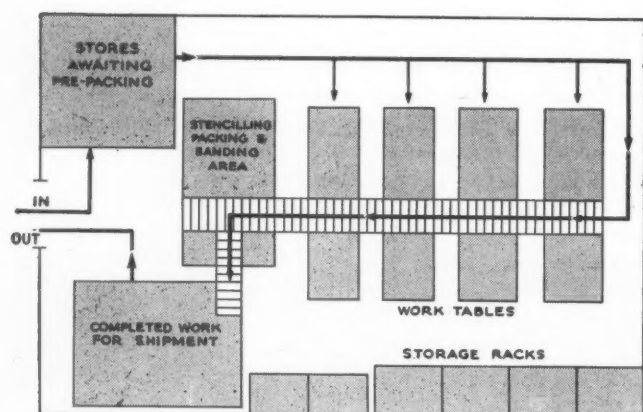
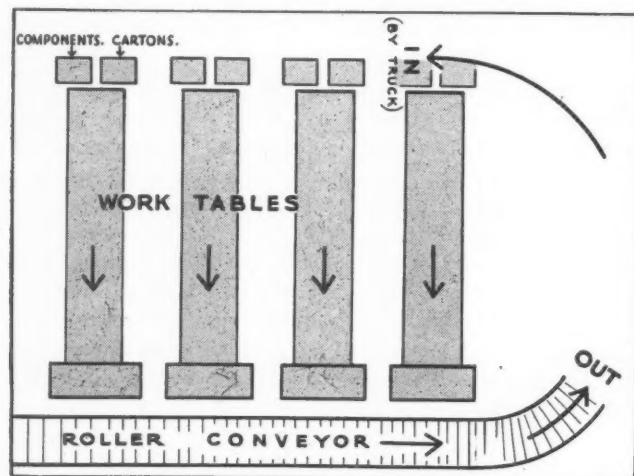


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13—Prepacking at outworking depot in London area. 14—Conveyor runs down side of room. Where output is large this helps prevent accumulation from retarding the flow. 15—In smaller setup conveyor can be run down the center.



duplication of these various processes at Ordnance Depots.

The *Production and Engineering Bulletin* for March, 1944, stated:

"In spite of the difficulties involved, the value of carton packing to the fighting forces far outweighs the disadvantages it may have for factory managements. Of particular importance is the gain to the Army in freeing serving men and women for other work."

If the prepacking cannot be undertaken in the factory, it is done by what are called in Britain "outworking facilities."

Firms that do not have facilities in their own factories for prepacking are urged to make use of outworking agencies. In the North Midland Region something like 2,000 persons are now employed at 21 such outworking centers.

Local villagers are engaged to do the work and roller conveyor systems are set up in small buildings, village halls and other suitable locations.

At such centers, incoming components, already treated with preservative, are stacked with the cartons on the left-hand side and are fed along the hall as required to tables placed on both sides of the roller conveyor down the center. At the tables the components are wrapped and packed into cartons and the cartons labeled, sealed and placed on the conveyor for moving into the stenciling, packing and banding area.

Here the cartons are packed into wooden boxes or crates which are stenciled and bound ready for dispatch to Ordnance Depots. A short conveyor at a right angle to the main conveyor, carries the crates into the dispatch area on the right-hand side of the hall, where they await collection. The remaining space along the right-hand side is devoted to racks for the storage of cartons and packing materials. Complete layouts of production lines are supplied.

Under this system, the components are already treated with preservative before they arrive and the correct quantities of labels and assembled boxes are shipped to the outworking center with each batch of components. The work of the outstation is confined to packing into cartons, labeling, sealing and boxing.

The output of such facilities during a recent 5-month period totaled 12,000,000 cartons containing no less than 170,000,000 components. This work was said to represent a saving of nearly 1,500,000 man hours, or the equivalent of 1,300 persons employed full time for 55 hours each week during the 5-month period.

First steps in the prepacking organization are taken by a branch of the army responsible for assessing usage of spare parts (Scales Branch). This branch decides what quantities of each part are likely to be required over a given period to maintain vehicles and weapons for use in forward areas.

Decision about sizes of packs is based on space available in beach maintenance packs or field park lorries. A nesting system has been adopted to use available space with a basic carton measuring 11 in. long, 7 in. wide by $4\frac{1}{8}$ in. Smaller cartons are planned to nest within these limits.

Types of preservatives and methods of application have been listed for all classes of stores. These preservatives and methods of application must be strictly adhered to.

For quick identification of spare parts by the repair organizations in the field, two labels are applied to the outside of the carton and another label to one of the components inside. Each label shows the part number and a description of the part. To prevent defacement of the labels by moisture, the labels should be clear-varnished or otherwise protected.

Standard quantities for field cartons may be packed, when required, into outer wooden cases, constructed to an agreed specification which covers thickness, handling, moisture content, battening, etc. Standard specification has also been laid down in respect to quality, thickness and constructional details of the cartons themselves.

Manufacturers have to make specific provision for all these points when prepacking spare parts for dispatch to Army Depots, but are allowed some discretion in arrangement of the components in the packs.

First process in handling the components is that of degreasing. In some quarters this (Continued on page 148)

Rehabilitation of shipping containers

The packaging field has adapted itself to many wartime emergencies, but the necessity of operating under drastically reduced quotas of shipping containers remains a critical problem—one of the most challenging it has ever faced.

The problem is particularly far-reaching in its effect on the packaging field. It affects not only the manufacturers of containers and container board, not only packagers who must have containers in which to ship their bottled and packaged goods, but also the manufacturers of bottles, closures, packages and packaging materials who also may be helpless without shipping containers.

As in the case of all wartime packaging problems which have been met and conquered, this one, too, will yield to energy and ingenuity.

An admirable case in point is that of the White Rock Mineral Springs Co., Waukesha, Wis., which has set up a smooth-flowing system that not only gets the shipping containers back but puts them through a complete reconditioning and repair operation, where necessary, to make sure that its products are adequately protected in shipment. White Rock's technique could well be studied by every company which has an interest in re-use.

White Rock mineral water is shipped from the springs in carload lots to drug, grocery and beverage wholesalers, who then redistribute it to hospitals, hotels, clubs and retailers in all parts of the United States.

Many of these wholesalers normally maintain no empty bottle return service. Consequently, this company used one-trip corrugated fibre shipping cartons and new bottles with no return deposit. So it was more critically affected than most beverage manufacturers when WPB fixed quotas

limiting the purchase of new bottles and the use of fibre shipping containers last fall.

White Rock lost no time in tying its efforts closely with the WPB Container Salvage and Re-Use Program, with results that have materially reduced this serious threat to its sales volume.

A patriotic appeal was inserted in all of the company's consumer advertising to return empty bottles and every White Rock bottle was labeled with a band that read, "I cost you no deposit but when empty *please return me* to your dealer to serve you again." Signs were displayed in retail stores.

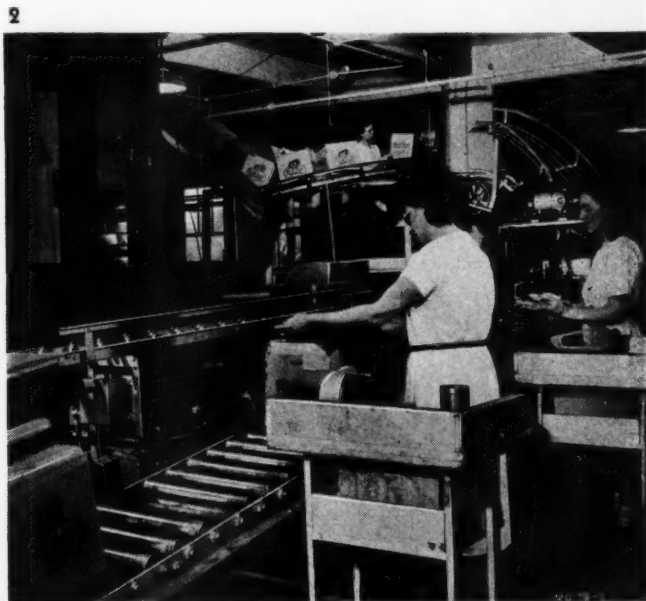
This message was repeated on a four-color "pin-up" poster of White Rock's well-known trademark Psyche, raised from her traditional kneeling-position on the rock gazing into the spring, and "brought to life" in a full-length live model portrait by color photography.

Wholesale distributors and specially appointed second-hand bottle dealers were authorized to pick up the empties from stores, pay 24 cents per carton for them; they were given a handling allowance of 6 cents per carton for this service. A sticker was applied to every carton giving notice of the 24 cents allowance and requesting that the carton be opened with care, saved and filled with empty bottles to be picked up by the wholesaler.

A circular letter was sent to White Rock retailers, hotels, restaurants and clubs throughout the United States, repeating this notice and request. This appeal was repeated again in drug, grocery and beverage trade papers with national circulation.

The public response, mild at first, gradually gathered mo-

1—Showing the last flap of a completely new top being attached to a rejuvenated White Rock carton in the specially equipped repair room. 2—General view of the White Rock packing room shows, starting from the top, the inspection of boxes sent up via conveyor from the stock room. Those found fit for service are sent to the packers; damaged cartons are put on another conveyor and sent to the repair shop. In the foreground gummed tape is being applied by hand as the filled cartons emerge from the automatic carton sealer.



mentum, until it became possible to assemble empty bottles and cartons in carload lots in principal cities. Empty bottles and cartons in carload lots are now continuing to flow back to the bottling plant at the springs for rehabilitation and re-use.

To decrease the number of cartons that are injured in opening, gluing down top flaps of shipping cartons by machine was discontinued, and they are now sealed by hand with a single strip of gummed paper tape. At first, when only cartons with glued flaps were being returned, only 25% of the cartons received were in suitable condition for re-use without repair; now about 75% are being received in immediately re-usable condition.

Specially equipped repair room

The worn and torn cartons requiring repair are carried by the receiving conveyor to storage, adjacent to the newly installed and specially equipped repair room. The latter is fitted with tables, benches and the molds or "lasts" over which cartons are slipped, like shoes, for patching and repair, and which are responsible for the repair process acquiring its nick-name "cobbling."

In the storage room, the cartons are separated into sizes. Ready cut parts that most frequently require replacing—including top flaps, bottom, side, and end pieces, and smaller pieces for patching are sawed in advance.

These parts to be used for new top flaps are pre-bent to make them fold down into a close-fitting top for the carton.

To speed up the repair operation, the slow-drying glue is applied to ready-cut parts in advance. Thus the glue is partially set before the repair part is placed in position in the carton. Best success is obtained with what is described by

R. O. Compton, White Rock's vice-president in charge of production, as a "tacky, flexible, slow-drying glue." It costs 13 cents per pound and requires an electric heater for melting and thinning.

The repair line is organized on a set routine that starts with the removal of partitions, brushing and trimming to clean the cartons and removal of all torn and useless flaps of cardboard to present a firm surface to which patches will adhere.

Those which need replacement of only one or two top flaps or a patch over a torn corner are sent to a bench with four projecting beams on the end of which a sort of cobbler's last is attached.

The lasts are of two sizes, one fitting the end of the carton, the other the width. The damaged end or side of the carton is fitted over the last and then the repair worker inserts a glue daubed patch between the top of the last and the inner wall of the carton. With the patch in place, a heavy weight is laid on the outside of the carton to hold the glued portion tightly against the inner wall until the glue sets firmly enough to hold.

Extensive repairs

Cartons requiring more extensive repairs—an entire new top, three top flaps or a new bottom—are routed to another bench. Here a cubical form, the exact shape and slightly smaller than the inside dimension of the carton, is inserted in the carton. There is just room between the rim of the form and the inner walls of the carton to slip in the glue smeared ends of the pre-bent top flaps.

The carton, with the form inside, is then inserted into a

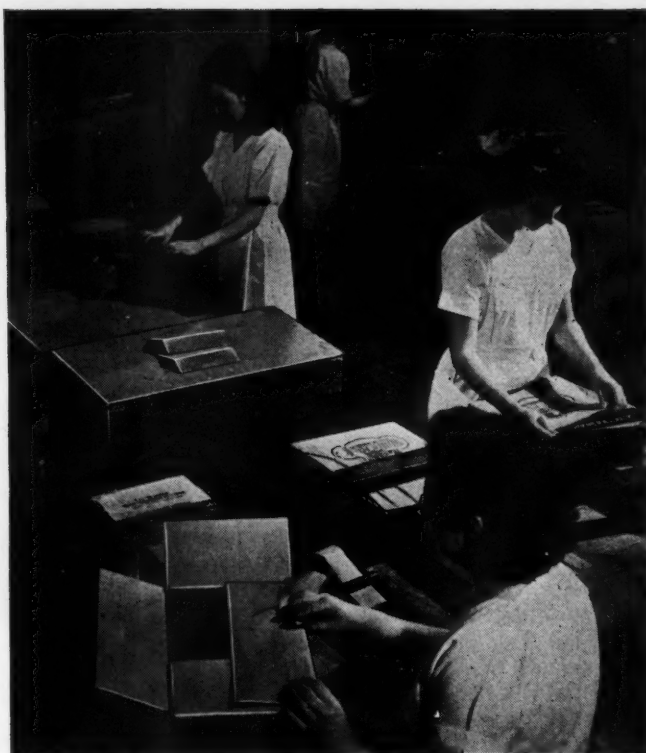
3—Brushing and trimming is the first step on the come-back trail for damaged cartons. Women remove the partitions, clean and brush the cartons and cut away torn and useless flaps in order to present a firm surface for the repair job which is to be done on adjoining benches and forms. 4—Here the cardboard is inserted in a slot set to receive it at just the right depth for the "bend" needed on the new flap of the rehabilitated carton. In reclaiming these cartons the company has used only salvaged scrap cardboard.





5

5—In this illustration a complete new top is being applied. A cubical form the exact shape and slightly smaller than the carton is inserted. After the glued flaps are attached, clamps hold them in place while the glue dries. 6—In this compact repair setup, rehabilitated White Rock cartons are turned out at the rate of 12 cartons per person per hour or about 84 per hour with the full crew of seven at the benches.



6

metal frame which is equipped with spring-set clamps that control a 2½ in. movable band at the top. With the patches inserted between the form and the inside of the carton, the clamps are operated to tighten the movable portion of the frame against the upper outside rim of the carton.

To improve the appearance of the "cobbled" carton and to lend some additional strength, a length of gummed tape is smoothed over the exposed joint of the patch and the cut edge of the carton.

A carton requiring the bottom to be strengthened is repaired by inserting the cubical last in the carton and weighting it to hold the glue in place until it sets.

The repair operation ends with installation of refurbished partitions to provide sockets for the bottles to protect them during shipment; the carton is ready to be packed and sent out once more.

To bring cartons, materials and tools within easy reach of the repair workers, the work benches in the repair room are arranged on three sides of a square, the fourth side of which is a conveyor.

Crew of seven repairs 84 per hour

With a full crew of seven at the benches, the output averages about 12 repaired cartons per hour for each worker, or about 84 per hour for a full crew.

A cost and time study made on 10,000 recently reclaimed cartons showed that hand-sealing the original outgoing carton of merchandise with one strip of gummed tape, had resulted in reducing the number of cartons in this lot of returns to only 2,500 that required repairs. This reclaiming was accomplished with expenditure of 102 man hours and 549 boy and girl hours of labor and the use of 45 rolls of gummed tape and 210 pounds of glue. Only salvaged scrap

cardboard was used in this extensive reclamation project.

A. E. Philips, president of the company, stated that consumer cooperation thus far indicates that a steadily increasing proportion of the cartons returned will require little or no repair, and that the total results obtained from this program of carton returns and repairs will be an appreciable factor in maintaining the company's sales volume which, for the past two years, has been limited only by the "permitted" and available supply of Government "quota-ed" packing and other raw materials.

Schrafft's also reclaims

Another company doing an outstanding job in carton reclamation and rehabilitation is the Frank G. Shattuck Co., of Boston, which operates the large chain of Schrafft's establishments (baked goods, candies, restaurants) in several East Coast cities.

The Shattuck company offers a 5-cent credit for used cartons, and is now getting a return of as high as 30% of the corrugated containers in which customers' purchases of candies, cakes or pastries have been packed. All cartons sent to Schrafft customers now carry a bright red sticker offering to pay the 5-cent refund plus return freight charges on 100-lb. lots. Also contained on the sticker are detailed instructions for removing the staples and collapsing the cartons for easy packing and return.

At its main plant in Boston, Shattuck operates a carton-reconditioning assembly line which removes old stencils and performs whatever operations are necessary to fit the containers for another trip. Because the containers are used for food products, all used boxes also are sterilized before being repacked and shipped.



1—Heavily waxed package performs function of a wick for this new type paraffin candle for heating rations. Army candle (left) and Marine are identical, with only the labeling slightly different.

HOT BOXES—packaged fire for fighting men

"What we want," said the officer, "is a small fuel unit that will boil a pint of coffee in a foxhole in a snowstorm." He was phoning from Col. Isker's office in the Quartermaster's Subsistence Research Laboratory, at Chicago, early in 1943.

Thus developed packaging's latest contribution to the comfort and good health of our soldiers in the field.

All meat components of emergency and combat rations are packaged ready to eat as they come out of the cans, but all of them can be improved by heating, and a little hot water for coffee or cocoa is always welcomed by soldiers on maneuvers in the field or on combat duty overseas.

Because of the obvious necessity for traveling "light" on combat missions and on the firing line, it is not always practicable for troops to carry one of the small gasoline stoves, or to find dry wood for a fire even if a large fire is permissible.

In one of the several discussions which followed the call from Chicago, the suggestion was made that candles had sometimes been used for heating the baby's milk and that a candle with a big wick might do the job for the soldiers. This thought led to the development of a packaged, wickless candle now being manufactured by the W. & F. Mfg. Co., Inc., Buffalo, and several other companies for the Army and the Marines.

The perfection of this wickless candle to meet the vigorous requirements of the soldier in the field was not only an interesting problem in product development, but necessitated a new approach to packaging. The resulting package has been designed to act not only as a protective container and as a medium on which to print directions for use, but also as a fuse for easy lighting and as additional wicking surface to speed the combustion. The box also acts as a shell to prevent loss of wax from running at high temperatures.

The first field tests of this new type of non-toxic fuel tablet were carried out by cooking lunch from emergency rations for a group of officers in holes dug in the flower beds back of the Quartermaster Depot in Chicago. The temperature

was 18 degrees and a stiff Chicago wind was blowing, but even under these severe conditions the tablets furnished sufficient heat to serve piping hot food. The new type of fuel unit thus demonstrated that it would develop adequate heat with sufficient speed for satisfactory use even in severe winter weather.

The perfected "Emergency Field Cooker" or "Fuel Tablet for Ration Heating," as finally accepted by the Marine Corps and the Army, consists of a mixture of high melting refined paraffin wax and fine wood flour. The wood flour acts as a multiple wick causing the block to blaze over its entire surface, and the wax-impregnated box serves as an additional side wick resulting in a large hot flame and a very rapid delivery of heat.

The wood flour and the box absorb and hold the paraffin as it melts, feeding the flame steadily without flooding it or allowing the wax to run away.

Anyone who has tried to light a cigarette in a strong wind realizes the necessity of having an emergency heater of this type light easily and quickly. In this case, the package itself serves as a quick-lighting fuse.

The wax flour mixture is placed in a tuck-end carton 2 in. by 2 in. by 1 3/8 in. having one end tab scored so as to tear open and leave four short flaps to light. It was determined that a carton made of very porous board, thoroughly impregnated with wax, would ignite most quickly. The ragged edges on the flaps are especially effective. These tabs ignite quickly and burn long enough to ignite the entire block.

Blotting paper made the best lighting tabs as it carried melted wax to the flame like a candle wick. However, blotting paper was obviously not practical for large quantity production. A white-faced board was found necessary, as the wax impregnation made any gray surface too dark to show printing well. Patent-coated newsboard was finally selected, as forming a satisfactory wick for lighting while also being white enough for legibility of directions and strong enough

to withstand wear in being carried by a soldier in his pocket.

The fuel tablets are absolutely waterproof and will burn after being immersed in water for long periods of time. It is only necessary to shake off the surface water, tear open the flaps and light. They will even burn floating in water. These properties make them excellent for use in wet, jungle conditions. Once well ignited, the strongest wind will not blow out the flame. To prevent loss of heat through the wind blowing the flame away, the directions suggest digging a shallow hole in the ground a little smaller than the diameter of the can to be heated. One side of the hole should be sloped to permit air to reach the flame. The fuel tablet is then placed in the bottom of the pit and ignited, and the can of food or drink, shaving or bathing water, is placed on the earth at the top. (Note to G. I. Joe: It is rumored that a shovel placed over a heat unit like this radiates a lot of heat in a small tent on a cold night.)

Interesting problems were encountered in designing equipment for impregnating the fuel units. The equipment as now used consists of a chain conveyor which carries the boxes through a dip tank. Girls place the units on the chains. They are carried through a tank of hot paraffin, then through a cooling tunnel. After cooling to the point at which they begin to stick to the links, the units are tumbled off the chain onto a cotton belt. This carries them through a 30-ft.-long cooling tunnel and deposits them on a second belt. From this belt, girls pack them into 25-count cartons which then go by gravity down a chute to the shipping department. The entire machine was a rush construction job, made up entirely of material locally available. Special conveyor chain was unobtainable, so a chain was built by brazing fixtures onto agricultural implement chain.

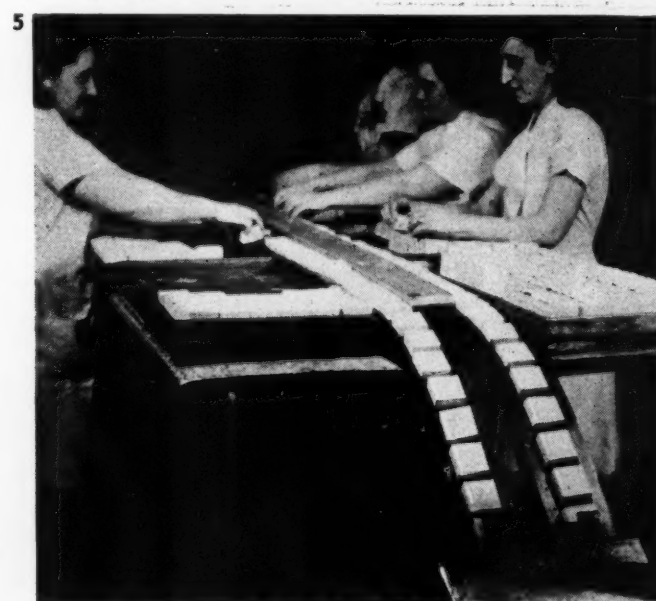
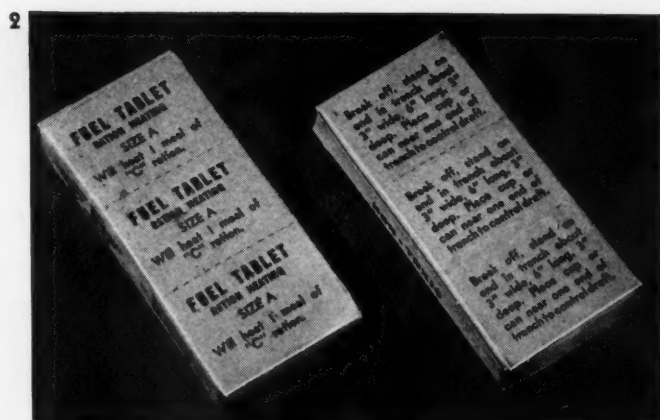
At the present time, three types of these heat units are being produced by the W. & F. Manufacturing Co., Inc., who worked with the Quartermaster's Subsistence Research Laboratory, Chicago, and the Research and Development Division, office of the Quartermaster General, Washington, in developing and perfecting the heaters.

The Marines are using a 3-oz. size known as "Emergency Field Cookers." The Army is using an identical size which is recommended as "containing sufficient fuel to heat one meal from the 10-in-one ration for five men." The Army also uses a smaller size formed in the shape of a flat bar $3\frac{1}{2}$ in. long which is scored so that it may be broken into three smaller blocks, each sufficient to heat the can containing the meat component of the "C" or "K" ration or to boil a little water in a canteen cup for hot coffee or cocoa.

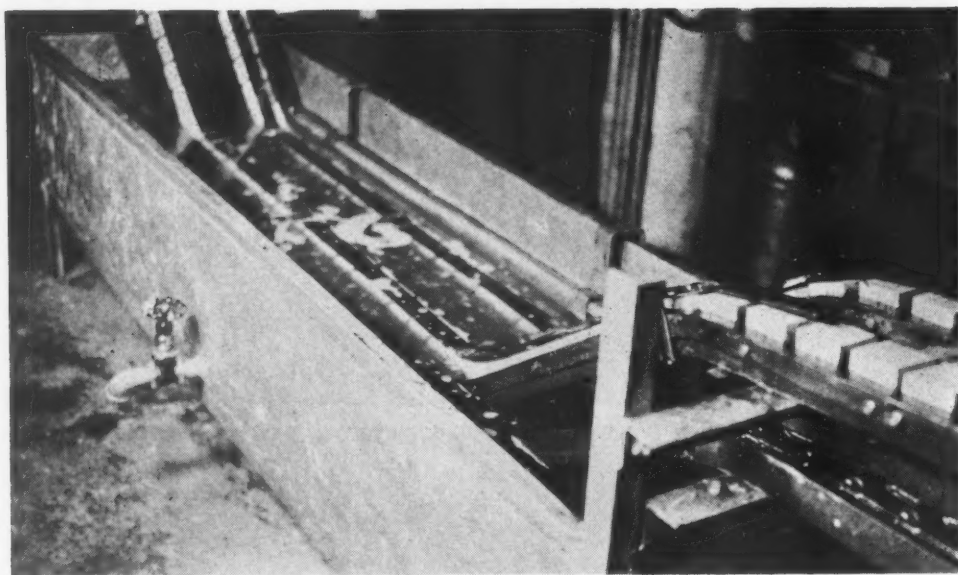
Excellent descriptive and instructional information is contained in the labeling of each tablet.

Both Marine and Army types of packages have on the perforated strip in the center of the top flap the instruction, "Tear off this strip." Directions to "light here" are printed on the narrow top strips which remain after removing the center. The boxes are perforated along all edges to facilitate combustion.

The Marine package contains the following directions on



2—Second Army type is this flat bar which may be broken into three sections for individual use. 3—Heating material is a mixture of high-melting paraffin wax mixed with fine wood flour. 4—Photograph of a tablet burning after immersion in water. It will even burn floating in water. 5—Girls load the packaged tablets onto a chain conveyor which takes them into wax-dip tank.



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6—The equipment used consists of a chain conveyor which carries the boxes through the dip tank—shown here with cover removed. Girls place the units on the chains. Blocks enter dip tank at far end, and emerge at right, still on conveyor chain.

two side panels: "(1) Dig hole 5 to 6 inches deep, with top small enough to support cooking utensil. (2) Leave one side of hole sloping for air to enter under utensil. (3) Tear open top cover of cooker, place at bottom of hole and light edges of box with match. (4) Place utensil over cooker and heat for 7 to 12 minutes, depending on quantity of food. (5) If windy, protect hole and utensil by piling dirt and stones around it. (6) Cooker will burn about 25 minutes. After 15 minutes, poke fire for faster burning." Instructions on the Army package are similar. The Army's Type A, triple bar, says merely, on each section: "Break off, stand on end in trench about 3 inches wide, 6 inches long, 3 inches deep. Place cup or can near one end of trench to control draft."

Other companies are producing one or both of the two general types of wickless candle heaters. Among these are the Gem Products Co., Milwaukee; the Socony-Vacuum Corp., New York; N. H. Stark & Co., Grafton, Wis.; the Hotel Research Laboratory, New York, and the Columbia Wax Works, Ozone Park, N. Y.

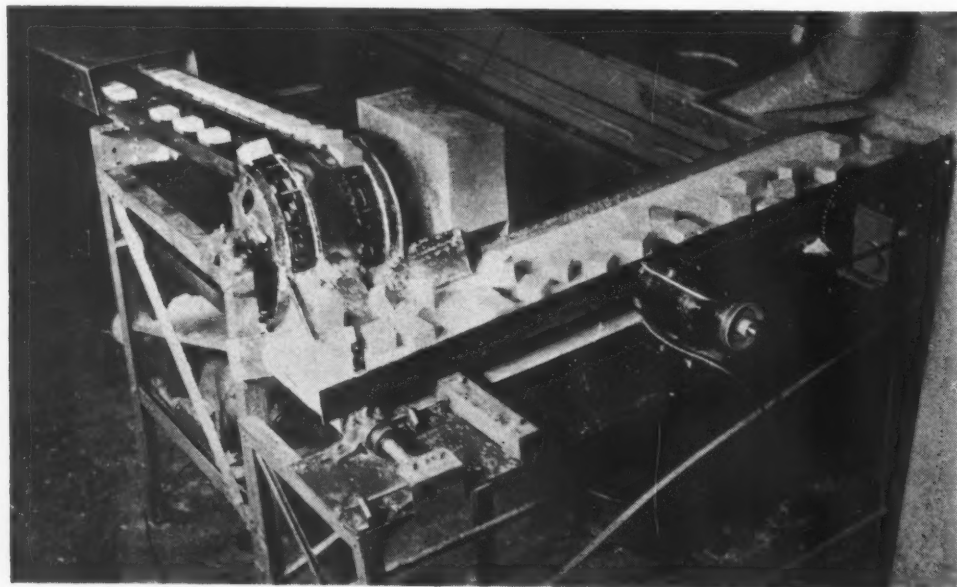
The Quartermaster Corps also is supplying a solidified alcohol fuel in metal containers of various sizes, but since metal for the containers and the alcohol ingredients of the

fuel itself are critical materials, this type of heater is presently available in much smaller quantities than the new paraffin candles, which require no critical materials other than paper-board.

The solidified alcohol type is being produced by the Sterno Corp., New York, and the Hotel Research Laboratory, New York. It is packed in an olive drab-coated can with replaceable pry-off lid. The jelly-like substance is sometimes colored for identification.

Further interest of the QMC now centers on a third and entirely different type of fuel tablet, which has very recently been developed by QMC researchers working with the Office of Scientific Research and Development. This is a synthetic compound known as trioxane (trioxymethylene) with a binder to hold it in solid form when burning and coloring matter to distinguish it as non-edible. This flat, one-ounce tablet is packaged in a special heat-sealed foil which, unlike the box for the paraffin candles, does not function as fuel but is discarded.

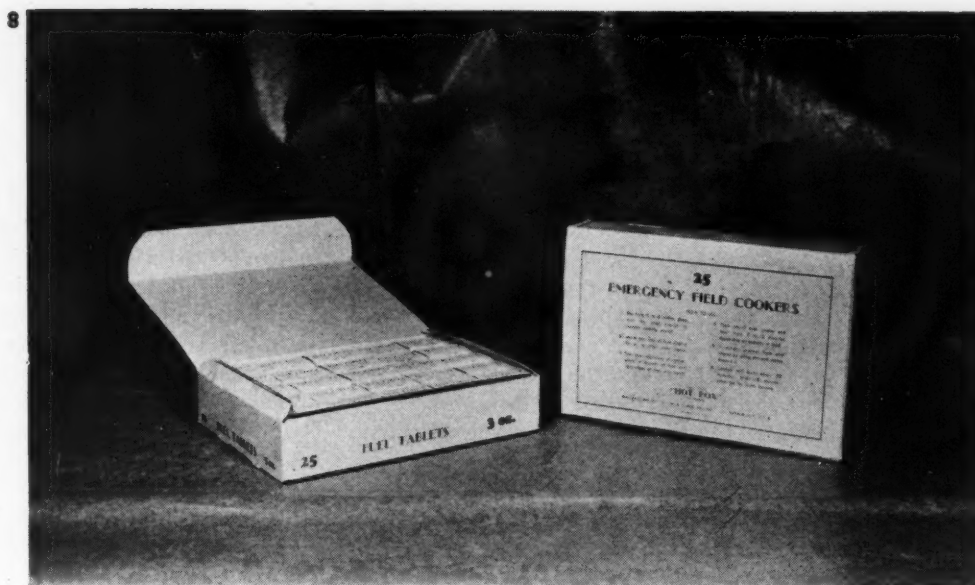
The trioxane tablet also is non-toxic, and is believed to have several advantages over the paraffin. It burns with a very hot blue flame of low luminosity, leaves little residue, ignites and burns faster than the other types. The tablet



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7—After emerging from the dip tank the blocks fall off the conveyor chain onto a cotton belt which conveys them to the cooling tunnel.

8—Shipping pack holds 25 tablets. Army pack at left; Marine at right. 9—Olive-drab metal can of solidified alcohol is another type of ration heater. 10—Most recent type is trioxane tablet packaged in heat-sealed, laminated cellulose and foil.



itself is flat and light weight, and will heat an individual meal from "C" or "K" rations in six or seven minutes. It is substantially free from smoke-producing ingredients and will not smudge the bottom of the vessel being heated.

The new tablet is 90 to 97% trioxane, with agents which serve merely to bond it together so that it will not liquefy when ignited. The material composing the tablet is manufactured by the E. I. du Pont de Nemours & Co., Inc., and it is formulated and packaged by the Miles Laboratory, Elkhart, Ind.

High volatility of the trioxane tablet posed a packaging problem. After dozens of tests of dozens of materials, the one finally chosen was a lamination of cellulose acetate film and aluminum foil, which was found proof against vapor transmission at heat as high as 130 deg. F. Specifications now provide that:

"Each fuel bar should be packaged in a laminated material consisting of a sheet of cellulose acetate not less than .001 in. thick, laminated securely to aluminum foil not less than .001 in. thick, and coated on the foil side with a permanently flexible heat-sealing compound.

"This coating shall be heavy enough to provide a satis-

factory permanent heat seal, and may be: nitrocellulose-resin-plasticizer, polyvinyl butyral, modified polyvinyl acetate.

"The package shall be formed by placing the fuel block between two sheets of the laminated film and heat-sealing the two sheets together on all four sides. The cellulose acetate film shall be on the outside of the package. The longitudinal fins shall be folded around the wrapped block to conserve space and to protect the seals against possible damage. . . ."

It is expected that various types of fuel tablets, especially those of low-cost materials, will find a substantial civilian use after the war. In a peacetime packing, the three-ounce size should be popular with hunters and campers, who could use them either for cooking or to light camp fires. The tablets are said to make exceptionally efficient fireplace lighters, and motorists could carry a supply to use as flares for use while changing tires or making any other emergency repairs.

Credit: W. & F. "Hot Box" boxes (3-ounce size) and shipping cartons, Wagner Folding Box Corp., Buffalo. Size A fuel tablet box, Royton Paper Products Co., Buffalo.

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Trends in cellophane

Suggestions of postwar trends in cellophane packaging are contained in a private exhibit currently being shown in New York City.

From a design standpoint, there is noticeable emphasis on window-type, assortment and compact unit packages generally. This emphasis is in line with an expected merchandising trend toward increased self-service and self-selection of packages. For the package fabricator, the designs generally anticipate greater use of automatic machinery to eliminate hand operations and lower costs.

Since the purpose of the exhibit is purely directional, the suggested designs shown do not necessarily apply to one specific product. But they do indicate the merchandising problems the packaging field must face in the postwar economic adjustments to the consumer market.

In this connection, an interesting package is one designed to further self-service of meats, a trend which was developing rapidly before wartime restrictions on cellophane were imposed (MODERN PACKAGING, February 1943, p. 48). Meat has been a bottleneck in the self-service field, but it is expected that this problem will be solved when individual fresh meat cuts, such as steaks and chops, are packaged in cardboard trays overwrapped with clear-view cellophane and clearly labeled as to brand, cut, weight, price per pound and total price of the item. These packages will then be arranged in self-service refrigerator cabinets, as butter and cheese are now frequently merchandised. Whether such packaging will be done in the individual store or in central packaging plants probably will depend on the size of the business. It is known that several of the large super-market organizations have plans perfected for central meat-packaging plants to service from 20 to 40 stores in specific localities, and these plans will go into operation as soon as war conditions permit.

The meat package in the exhibit (Fig. 1) shows a handsome steak in a paperboard tray. The tray is simply overwrapped and sealed with clear cellophane which has as its

only decoration the brand name and star insignia printed in white in repetitive lettering in diagonal lines across the package. This printed wrap is designed for larger organizations having sufficient installations to warrant buying cellophane in printed rolls for store use; either the store name or packer brand can be featured in such printing. It is anticipated that smaller stores would use special, unprinted cellophane. In any case, the information as to the cut of meat contained in the package, price per pound, weight of the cut and the total price is to be penciled on a small adhesive label and attached to the package at a corner of the top face.

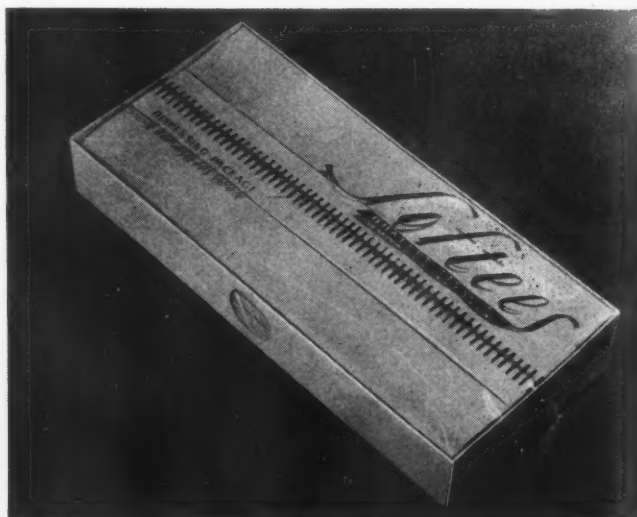
In facilitating the self-service development generally, intensive concentration on the self-selection and display value of each package is evidenced in the exhibit. Bulkiness is definitely avoided and eye-appeal is heightened by the use of more color and more window-visibility.

A rectangular package of dried eggs, for instance, features in the printed design on its face a happy rooster crowing over three egg-shaped cellophane window openings which give a glimpse of the contents—dried whole eggs, whites and yolks, arranged in three separate compartments within the package.

A package designed for disposable tissues (Fig. 2) is a white paperboard tray completely overwrapped in cellophane. Color and quality of the tissue can be observed through the transparent top, and there are also circular window openings in both sides of the tray, allowing identification of color when the packages are stacked on a shelf. The feature of this package, however, is its cellophane zip-tape opening device, which is cleverly handled in the printing of the wrapper actually to simulate a zipper. It merely opens a slit through which tissues may be removed one by one. Brand name and other information are printed on the cellophane, including the suggestion, "Zip and it's open," to emphasize the convenience feature.

A new type of coffee package for the postwar market is a box of cellophane-wrapped squares, each about the size

1—Printed cellophane overwrap protects tray package for steak, typical of postwar self-service meat packages. 2—Patented dispensing tray package for tissues features easy opening as well as visibility and protection. Imprinted design cleverly highlights "zipper" opening, and tissues may be removed one by one.



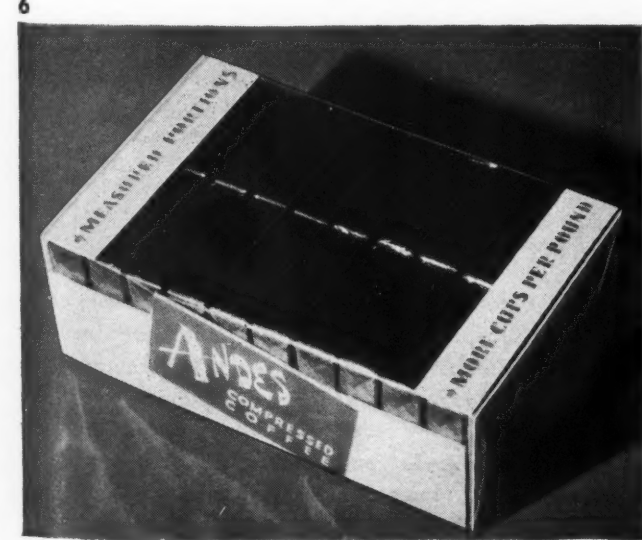
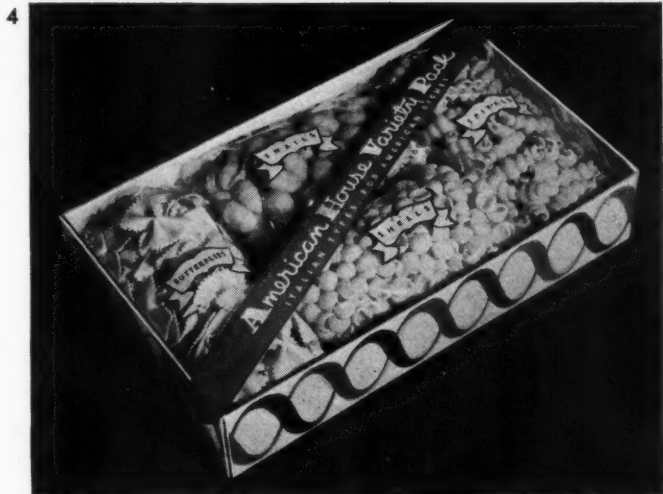
of a yeast cake. This results from a wartime development in processing whereby freshly roasted and ground coffee is compressed at a temperature of 45 deg. below zero F., and in an atmosphere of carbon dioxide to prevent oxidation. The compressed squares are wrapped and sealed individually in cellophane, and it is said that coffee processed and packaged in this manner holds its flavor better and loses flavor more slowly after the original package is opened. The coffee grains pour easily when the wrapper is removed, and an outstanding advantage is that the squares give a precisely measured portion for proper coffee-making.

The civilian package envisioned for this new coffee product (Fig. 6) is a paperboard tray holding 20 squares, overwrapped with cellophane on which brand name and other information may be printed. Here is a case in which a clear view of the product—since it is an unfamiliar one—is an essential selling point. For convenience, also, each square of coffee, sufficient for three cups, has a zip-tape opening device. This type of packaging probably could be handled rapidly and economically by automatic machinery.

In line with the trend toward compactness, a new cellophane-wrap shirt package (Fig. 5) takes up less stock room and counter space and offers convenience, also, for the consumer. The package is made possible by a new patented shirt collar construction which permits a flat fold without causing creases or wrinkles. No pins are used in the special fold. Important, also, is the fact that this type of fold makes possible machine wrapping. The label information printed on the cellophane, which is heat-sealed, emphasizes the convenience features of the package.

The assortment package is emphasized as a strong stimulus to impulse buying. For example, there is a macaroni package (Fig. 4) with a cellophane overwrapped top which contains an assortment of pastas—butterflies, shells, spirals and snails—as well as the conventional macaroni. The little-known varie-

3—Smartly designed cellophane bag for sugar, rice and similar products features new pouring spout. 4—Clear view of contents facilitates merchandising of assortment packages. This one tempts housewife to try little known types of macaroni. 5—New shirt-collar construction makes possible this compact flat fold, which is machine-wrapped and heat-sealed. 6—Compressed coffee may make its appearance on civilian market in this dress. Each block is sealed in cellophane with a convenient zip-tape opening.





ties are thus highlighted and the customer is tempted to try the new attractive assortment rather than the old one-of-a-kind package. At the same time, the manufacturer benefits by the opportunity to popularize less familiar products.

Instead of buying a bag of flour or a slab of cheese, the shopper may also be tempted by the four-way lure of a package of compressed prepared mixes featuring gingerbread, devilsfood, muffin, and waffle flour, or a neat package holding American, brick, cheddar and Swiss cheese.

Refreshment appeal is dominant in a smart six-fruit flavor assortment for drinks. Through a drinking-glass-shaped window can be seen vari-colored packets, individually wrapped, suggesting six different drinks. The whole package is machine-overwrapped as well.

A dehydrated and compressed soup package is shown with four small soup pots, designed window-fashion, each window revealing a different soup. pea, cream of tomato, borscht and peppercorn.

"Hard" merchandise is not overlooked. Featured in the exhibit is a rack of cellophane bags holding various-size screws. This is the same type of rack from which similar 5¢ peanut bags have been lifted by customers in serving themselves. Since the exact size of the screws is marked on the bag and also can be seen by the customer, much handling-time loss may be eliminated by adapting this technique to the merchandising of many small hardware items. These bags can be fabricated and filled on an automatic machine or the bags can be supplied by a converter and then filled.

A screwdriver and a gadget to hold it in place are presented in a smart harmonizing cardboard tray with cellophane overwrap. The package has printed instructions on the back, suggesting the best way to keep the screwdriver useful and handy.

New-fashioned cellophane bags are featured which not only reveal the contents but carry strong color and convenience appeals. One of these bags (Fig. 3) has a patented pouring lip adaptable to any free-flowing product. Opening is effected by tearing off the cardboard triangle on the dotted line. To pour, sides are pushed to the center, enlarging the opening like a spout. These directions are printed on the cardboard flap, and the imprinted label also calls attention to the convenient pouring spout.

How cellophane may be used in the new trend toward single-dose packaging of drugs and medicinals is demonstrated by a suggested package for bicarbonate of soda (Fig. 7). Individual doses are heat-sealed in cellophane envelopes and a number of the envelopes packed in a window box which clearly shows the single-dose feature. Label information points up the advantages of protection, exact measure and convenience in use—no running downstairs for a teaspoon in the middle of the night. The entire box is overwrapped and sealed in cellophane, with a convenient opening tape.

Reportedly due for wide acceptance after the war is the type of ready-to-use vegetable package illustrated in Fig. 8. Fresh, washed spinach is readily packaged in a simple cellophane bag closed with a card- (Continued on page 144)

7—Window calls attention to single-dose envelopes of bicarbonate, offering convenience, protection and accuracy of dosage. Zip-tape readily removes cellophane wrapper.
8—Self-service markets will favor ready-to-use vegetable packages. Note how cardboard header is used to carry sales message.
9—Bottles in cellophane sleeves are kept clean and better protected against breakage. This package, with tape opening, can be handled automatically.



1—Girls at Doughboy Mills pick compressed dehydrated food bricks from special wrapping machine, pack them in K-1 cartons with waterproof inner liner, for shipment overseas. 2—Attendant examines cheese brick as it comes from huge press. Chute in foreground leads to conveyor belt which takes bricks to wrapping machines.

Food that fights for freedom

Packaging developments have helped to make successful the most ambitious effort yet toward mass production of dehydrated, compressed foods.

Recently placed in operation at the plant of Doughboy Mills, Inc., New Richmond, Wis., is a 33-ton rotary press which, with 180 piston arms working at high speed, is able to produce 180 bricks of compressed dehydrated soup per minute. One hundred and five employees are constantly engaged in feeding its apparently insatiable appetite. By actual count, the huge machine produces 1,500,000 bricks of soup per week, each 1-lb. brick measuring 6 by 3 by 2 in. This is enough concentrated soup mix to feed a population the size of Chicago's for one day.

The machine is the only one of its kind in the world and it is being closely watched by Government, food industry and packaging men—particularly so because all of its production is intended exclusively for distribution to the civilian populations of European areas liberated by the Allied armies.

Packaging men are interested because compressed dehydrated food poses special packaging problems and if it is to become a large-volume product it presumably will be in an operation such as that now being conducted in Wisconsin. Especially important at the moment is the conservation of packaging materials afforded by the method. Ordinarily, dehydrated food has only one-eighth the bulk of the raw vegetable; by compression, it is further reduced in mass by one-half. The saving in materials required to package "food to feed the world" is obvious; additionally, of course, the conservation of at least 40% in shipping space is of utmost importance in the critical job ahead.

Naturally, it is much easier for moisture to find its way back into the food bricks than it is to take it out. Therefore, it is necessary that the bricks be wrapped in a moistureproof material and that they be very tightly sealed.

After a careful study of various wrapping materials, Doughboy Mills chose a waxed, triple lamination consisting of a sheet of special high-finish grade kraft, a layer of cellophane

and a sheet of sulphite, the whole being over-waxed to make possible quick and firm heat-sealing. The wrapping operation was to be handled on special machines linked directly to the big press and at a rate of speed which would keep pace.

Principal problem for the manufacturer of the wrapping machines was the necessity for folding the material at high speed and sealing securely along all folds. This could not be done with the standard method of heating from the outside after the folds were made. A special folding box was therefore developed for the machine, consisting of three separate folders for each end fold. Each folder is individually heated, with separate heat control for each, to afford maximum efficiency in heat-sealing the wrapper. The folders are designed to preheat the folds so that the inner laps may be sealed; in addition, a final blast of heat is applied, resulting in a tightly sealed package.

Other features of the wrapping machine are the use of a chain infeed to carry the packages into the machine proper; an overhead chain to convey the packages separately through the folding line; a water-cooled belt discharge to set the folds after they have been heat-sealed, and an electric eye for properly registering the printing on the special wrapping material. Three of these machines, which have been adapted from standard models, are in operation, each discharging at a minimum rate of 60 packages per minute.

Because of the flexibility of the food-bricking machine, it can be adapted to compress one-pound bricks of most dehydrated foods now in use. For the moment, however, the principal products are cabbage, tomato and cheese soup mixes.

For shipment, 48 of the one-pound packages are packed in a waterproof creped bag, which in turn is placed in a solid fibre export case, finally strapped with two steel bands.

Credit: Laminated wrapping material, Menasha Products Co., Menasha, Wis.; wrapping machines, Package Machinery Co., Springfield, Mass.; food bricking machine, Auto-Ordnance Corp., Stamford, Conn.



Cellophane dress for peas

A newly designed printed cellophane wrap for "Pictsweet" frozen peas has made its debut in the Western market. One of the main reasons for the change in design, according to Bozeman Canning Co., was to make this new package conform with the labels used on the Company's canned products. The same general theme is now carried out on both types of products in order to establish family identity.

All of the frozen vegetables in the Pictsweet line are now using this new design with the vignette showing the actual contents of the package. A comparison of the two is shown in the accompanying illustration. The background of the new wrapper is a frosty white with the peas in the vignette showing up in natural-color green. The tradename, Pictsweet, is in white reverse lettering on a band of black edged in gold. A judicious use of red and green makes the package arresting and effective. The reverse side of the wrapper is used for very explicit directions for the storage and preparations of the particular fruit or vegetable in the carton while a side panel names the varieties in the Pictsweet line.

The company selected printed cellophane for the overwraps of its fruits and vegetables because of the fine color reproduction and very lifelike vignette that could be obtained on this material. Another advantage on the production lines is the ease with which a satisfactory seal can be made. In addition, adds the company, cellophane was found, through experiment, to be the best medium for the prevention of moisture and vapor penetration.

Credit: Cellophane, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. Fabricators, Dobeckmun Co., Cleveland, Ohio, and Shellmar Products Co., Mount Vernon, Ohio.

DESIGN HISTORIES



For the dry skinned

A new line of cosmetics brought out by Botany Worsted Mills Passaic, N. J., is admittedly merchandised only for the woman with a dry skin. This, however, does not limit the market because, according to the company, 85% of women either have, or think they have, a dry skin.

This long established woolen mill has incorporated a by-product of its business into a cosmetic line. The product is wool fat, or lanolin, which is claimed to be the nearest thing to the natural oils of the skin.

There are five products in the line, all packaged to maintain family identity. The boudoir look is achieved by means of small flowers in lavender, yellow and green sprinkled on the stock bottle, jars and box top. The tube, which contains pure lanolin, is kept simple in design with only the lavender imprinted label to identify it because it is more of a medicinal product than an actual cosmetic.

None of the five products have paper labels; informative data are printed directly onto the container at the same time the flowers are applied. The jar caps are of metal of the same shade of lavender which predominates in the flowers. The set-up box holds three cakes of superfatted lanolin soap, which is the one product the company recommends for the woman with an oily skin. Literature includes a "quiz book" and a folder.

Credit: Printing, Anigraphic Process Inc., New York. Bottles Carr-Lowrey Glass Co., Baltimore, Md. Jars, Hazel-Atlas Glass Co., Wheeling, W. Va. Tubes, Sun Tube Corp., Hillside, N. J. Boxes, Garfield Box Co., Clifton, N. J., and Flower City Specialty Co., Rochester, N. Y.

Each in its own place

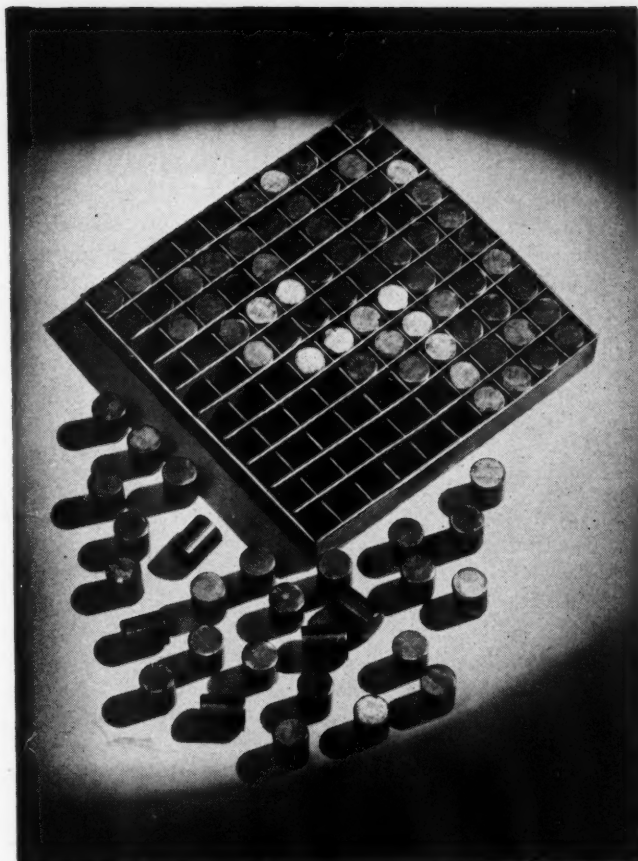
The advantage of placing items which require crash protection into individual cells has been obvious for a long time to manufacturers whose products have required this type of packaging. These patented partitions which lock together into a complete and rigid unit have long been used by cookie bakers, candy makers, bottlers and egg wholesalers but they have really come into their own under the pressure of war needs in the packaging of shell fuses, munitions, shell cases, food and supplies needing extra protection during shipment. Thus bruises, abrasions or breakage is avoided and safe arrival of needed supplies in good condition at the fighting front, or assembly line, is assured.

Experience in packaging war matériel points the way for wide adaption of this form of packaging in many new fields when peace returns.

The partitions for the military containers are produced to size specifications on automatic machines which save all-important manpower. The patented feature locks the strips together so that they cannot fall apart. This facilitates speed in handling with a further saving of labor. After a product is packaged each article remains separate and protected until final use.

It is said that a combination of these partitions inside the package and a sealed, waterproof cellophane bag outside the package produces a virtually crashproof, dustproof, moistureproof rustproof, and corrosionproof container. At the present time the partitions are available on priority only but it is expected that, with the coming of peace, they will be priced economically enough, to appeal to a large group of packagers.

Credit: Partitions, Traver Corp., Chicago.



DESIGN HISTORIES

Bags for shipping coffee

Twelve 1-lb. bags of roasted, ground Fancy Mark coffee are packed into this large duplex shipping bag by Standard Brands Inc. The bag, made of two walls of 70-lb. kraft, is obviously intended to replace the corrugated cartons that are in such short supply right now.

Although the shipping bag holds only 12 one-pound packages as in comparison to the 24-lb. capacity of the corrugated carton, it is claimed that the bag is much more convenient to handle and considerably less expensive. It is intended especially for free-flowing products packaged in unit-size, flexible containers.

It is interesting to note that very little "breakage" results from the use of this type of shipping container for products like coffee, tea or rice because the double-walled, flexible bag allows the contents to "give" with the bumps and bangs instead of rupturing. Standard Brands is greatly pleased with the way the container stands up under the terrific beating of present-day shipping hazards.

The trademark and other informative data are printed directly onto the kraft of the bag and it is sealed by means of a simple gummed tape.

This bag is said to satisfy the freight requirements for shipping this and other products which formerly required corrugated cartons. In fact, a panel on the side of the bag reads: "Paper container shipping bag meeting requirements of Consolidated Freight Classification for Roasted Coffee."

Credit: Shipping bags, Equitable Paper Bag Co., Long Island City, N. Y., and Union Bag & Paper Co., N. Y. One-lb. coffee bags, Union Bag & Paper Co., N. Y.



ARMY FROZEN VEGETABLE

One of the best methods of keeping the morale of our soldiers at a high level is to feed them good fresh meat and vegetables. The A Ration composed of perishable foods accomplishes this purpose and is served in the territorial United States and, whenever possible, elsewhere. However, during certain periods of the year and in certain localities in this country, as well as in nearby outlying territories, such as Alaska, Newfoundland, and Iceland, fresh vegetables are difficult to obtain and canned ones have to be substituted.

A little more than two years ago, the Army initiated a program to procure frozen vegetables for troops stationed in areas where fresh supplies were difficult to obtain. This can be accomplished only when transportation and storage facilities necessary to provide satisfactory protection for these products are available.

Consequently, the only frozen vegetables leaving the country are going either to northern territories such as Alaska or are being used on Navy ships. They are also used in situations where it is physically impossible to prepare fresh vegetables; for example, the Navy feeds as many as 500 to 10,000 men from a single galley. It is quite obvious that the preparation of certain fresh vegetables would be impossible at such points, since it would require 25 men working 8 hours to shell a quantity of peas or lima beans sufficient to feed 10,000 men. By using frozen vegetables at points like this and at some embarkation stations, the men are able to continue to subsist on the A Ration with the minimum of inconvenience to the cooks and a great saving in labor.

In procuring the various vegetables, the Government

* Packaging Branch, Subsistence Research and Development Laboratory, Chicago.

estimates the quantity needed for a year's time and determines its percentage of the total pack to be produced. For example, if the figure is 40% of the year's pack, the twenty or more largest packers are requested to supply voluntarily 40% of their pack of five or six standard items to the Army. For the year 1944, such items are peas, snap beans, corn, lima beans, asparagus and spinach. Naturally, all producers are not in position to supply 40% of each item; however, they may suggest an alternate—either one of the main items or one of the minor ones such as broccoli, brussels sprouts, cauliflower and certain other vegetables which are used the year round in small quantities in Alaska. In this way, if the Army requires 40% of the year's pack, it will obtain 40% composed of the six main items plus small quantities of the exceptional items used outside the United States.

The price paid to a packer for his product is determined by taking the ceiling price for the item being sold, as established by OPA regulations, and deducting the selling expense or broker's fee that the packer normally would have in selling to the civilian trade. In some cases, OPA regulations permit the inclusion of a storage charge that is in excess of actual accrued storage which is deducted from his price. On the other hand, if Army specifications call for a change in packaging requirements which are not included in his OPA price, the packer is allowed to add this extra cost to the price of his product, above that set by OPA regulations. As an example: If packers do not use cellophane liners, the ceiling price originally would not include this cost. He is, therefore, allowed to add the price of the liner and the direct labor involved in using it to his ceiling price. However, the new

PHOTO COURTESY BIRDSEYE-SPIDER



1—A typical 2½-lb. top-opening institutional carton with liner, which can be redistributed in commercial channels if necessary. Final overwrap not shown.

STANDARDS

by Lt. Robert de S. Couch, Q.M.C.*

specifications have eliminated, wherever possible, extra packaging material and labor above that required for civilian trade. This obviously saves the Government money and eases the packer's problem, since the pack will meet both civilian as well as Army requirements and his package supply problem becomes less difficult.

The Army does not accept the packer's product until it has been cut, processed, frozen and packaged. This is another reason why it is desirable to have the packaging specifications for frozen vegetables in accord with commercial practice as nearly as possible. If a packer were working on an Army contract and using a special type of Army package which was not very similar to the package he uses for civilian purposes, he would have difficulty in disposing of his production if it were not accepted by the Army, since it would be in a different package and civilian buyers might assume that it was not his standard or first grade product.

After frozen vegetables are purchased, they are usually stored in the immediate vicinity of the production area, if the space is available, or they are moved to key storage centers, such as St. Louis, Kansas City, Ft. Worth, Louisville, Nashville and points in New York State. During storage, routine inspections are made every two months to determine the condition of the frozen vegetables. In this way, very close control is maintained and if, for example, a shipment of peas showed some signs of dehydration, the entire lot could be moved within a day or two and consumed within a week. By this method, losses during storage are kept to a minimum.

Although the Perishable Branch Field Headquarters in Chicago purchases all frozen vegetables, the 30 odd Q.M.

Market Centers scattered over the United States have the responsibility of distribution to Army, Navy and Marine installations. Certain quantities of each product are allocated to each Market Center depending upon the number of men in the area served, and shipments are made on the basis of these allocations. The frozen vegetables are shipped to Army and Navy installations which have cold storage capacity for limited quantities. At the camps, the frozen vegetables are issued to the companies on the basis of 10 to 15 lbs. per 100 men, depending upon the popularity of the individual items.

It is obvious that there are a number of advantages in having Army packaging for frozen vegetables exactly the same as that for commercial purposes—namely:

1. It reduces the number of inventories of different types of packaging materials carried by the individual packers.
2. It eases the procurement of the limited number of items.
3. It simplifies the production of these items in the carton and converting industry.
4. It saves the Government a great deal of money by not having to pay for extra packaging materials and additional labor.

In order to determine how well the various civilian packages withstand the treatment received in Army channels, a large-scale test was made at Camp Blanding, Florida, in December, 1943. The test involved several carloads of peas, lima beans, corn, spinach and asparagus which were packed in various types of packages. The vegetables were consumed over the period of a week.

As a result of this test, it was possible to prepare an Army

PHOTOS 2, 3, 4 AND 5 COURTESY QUICK FROZEN FOODS

2

2—The illustration shows a one-pound top-opening carton with liner. In the front are the finished cartons after the required overwrap has been applied.





3—Army buys packages of many sizes, permits full use of trade names and designs. All the packages shown here have been prepared according to specifications. The required overwraps have already been applied.

specification which was broad enough and flexible enough to include all the satisfactory packages now used on the domestic market as well as to permit any new and satisfactory packages which might be developed after the specification was written. Various types of institutional-size packages for both solid and loose frozen products, as well as bulk packages, are included.

The institutional size packages range in net weight from 2 to 6 lbs., in multiples of $\frac{1}{2}$ lb., and can be of either the end opening or the top opening style. By keeping the weights in this range, it is possible for the packer to place his entire production in cartons of one size for both the Army and for his civilian trade. In other words, the packages are interchangeable and he has to carry only a minimum inventory.

Both the top opening and the end opening carton can be used with or without liners or bags. In the majority of cases, the liners or bags are made of cellophane, which may be of either the heat-sealing or the non-heat-sealing variety, depending upon how it is used in the package. Before the test at Camp Blanding was made, there was an impression, in some circles, that 450 cellophane would have to be used for Army packages because of the exceptionally rough treatment

that the packages would receive in Army channels, and it was also believed that an anchored coated film would have to be used for cellophane liners for wet packs such as spinach. However, during the test, not one package was found in which the coating showed signs of peeling away from the base sheet, either on the anchored or unanchored coatings. Neither was there any evidence of breakage when either the 450 or 300 weight cellophanes was used. On the basis of these results, it was decided to specify only two grades of cellophane, both 300 weight, one a moistureproof cellophane and the other a heat-sealing, moistureproof cellophane.

One of the main objects of using a liner in the carton is to retain the moisture in the package before freezing and to prevent water-vapor from escaping after freezing and during storage. There are two general ways, with small variations in each, of accomplishing this purpose—by the use of a bag or a sheet liner. If a bag is used and it is to be heat-sealed, which requires heat-sealing cellophane, the greatest degree of protection is provided. If the bag is to be closed by folding, non-heat-sealing cellophane may be used and the bag itself manufactured with the use of an adhesive.

If the liner is merely a sheet, non-heat-sealing cellophane may be used. This type of liner is not as resistant to water-vapor transfer as the closed bag liner, but the sheet liner usually offers satisfactory protection. The openings of the liner are sealed with ice, which provides some resistance to water-vapor transferring from the inside of the package to the outside. A $2\frac{1}{2}$ in. overlap is specified to provide every opportunity for water to be trapped between the fold so that the ice seals will be formed when the package is frozen.

Also permitted for use as a liner is a laminated wet-strength treated glassine. This sheet has been found to give very satisfactory results, both from the standpoint of the prevention of dehydration of the product as well as the retention of its strength when wet.

As mentioned above, the materials used for liners are in general used throughout the industry, and by limiting the varieties of cellophane to two it was possible to keep costs down and simplify the inventory and procurement problems.

Cartons

The cartons used for institutional packages in the East differ somewhat from the type used on the West Coast. In almost every case, the West Coast producers use a so-called natural

4—End-opening $2\frac{1}{2}$ -lb. institutional pack without overwrap.



pulp sheet which is usually a mixture of unbleached sulphite and groundwood pulps. This stock is lighter in weight and less dense than that used in the Middle West and on the East Coast. The majority of packers on the West Coast do not include liners in their packages, whereas, on the East Coast, the majority of the products are packaged with liners or bags. Naturally, when a liner is not used, it is felt that the cartons should be made from virgin pulp in order to prevent odor and flavor transfer. However, work is now being done to determine whether this is absolutely necessary.

One of the purposes of the special test already mentioned was to determine whether the Western carton would give as satisfactory performance as the Eastern carton when handled in Army channels. The West Coast packages performed satisfactorily, and because of the additional facts that the product is inspected every two months during storage and a complete turnover is made within every 12 months, they were pronounced satisfactory for Army use. It was necessary, because of the various types of boards being used in the industry, to draw up a table which would specify the desired thickness and weights necessary when using different types of boards.

There are separate tables for natural sulphite-groundwood pulp board, kraft-lined chipboard, and solid manila and all other boards. This table conforms very closely to the cartons used for the civilian trade. All the cartons used for both the lined and unlined packs must be either cold water paraffined on both sides with a minimum of 18 lbs. of wax per ream, or having an inner liner spot glued to the board waxed on the outside with a minimum of 15 lbs. per ream. One other combination permitted is a carton hot-waxed on the outside with an inner liner laminated to the board with a wax compound. The waxed carton adds a great deal of protection to the product since it limits the transfer of water-vapor to the openings in the carton. The purpose of the liners and outer wraps is to seal up these openings.

Overwraps

Every institutional package has to include an overwrap in its make-up whether or not it has a liner. The overwrap is

very important and contributes greatly to the functional qualities of the package so that great care should be taken to see that satisfactory overwraps are used and that they are properly sealed.

Two main shortcomings of overwraps are (1) they tear easily at the corners, and (2) their seals are not tight. To overcome the first difficulty, a good quality paper should be used having as high a tearing strength as it is possible to obtain. For the second, there are several factors which contribute to good seals in an overwrap—first, to have a sufficient overlap at the seam and end closures; second, to use a modified wax which will provide good seals at low temperatures, and third, to see that the wrapping-machine sealing mechanism is properly adjusted. The C.Q.D. specification is fairly general on this subject, with the exception that it states that seals shall not be less than $\frac{3}{4}$ in. in width. This provides an opportunity of using any type of waterproof overwrap as long as it is not torn and the seals are intact.

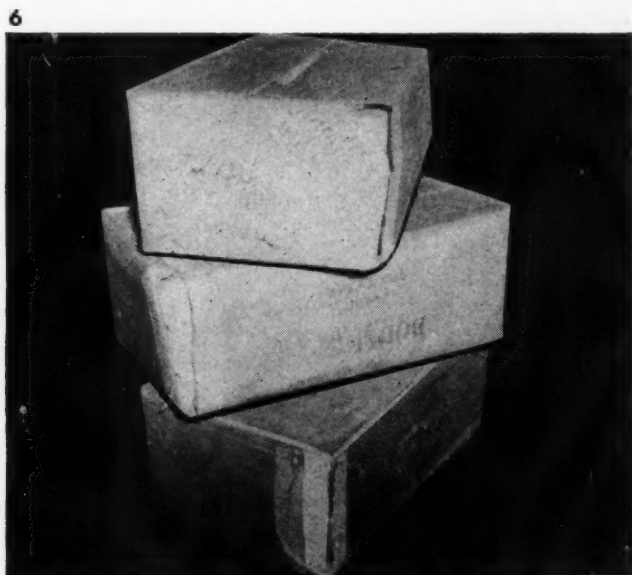
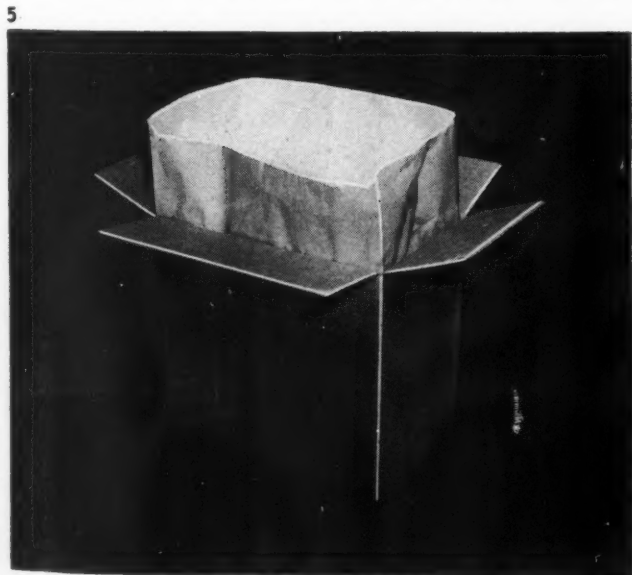
Corrugated case

The cases used for the carton packs are to be made from 200-lb. test corrugated board. The manufacturer's joints on these cases should all be taped with cloth not less than $2\frac{1}{2}$ in. wide.

Between 24 and 50 lbs. of the product can be packed in these cases. One of the important operations in packing the packages is to see that good seals are made on the case. It was found that poorly sealed cases tended to spread when placed at the bottom of a stack and the spreading transferred a strain to the manufacturer's joint which, in many cases, resulted in tearing the joint and the case became of little use. However, it was found that if the cases were properly sealed, there was no trouble of this kind.

The above discussion has been centered mainly around the institutional type of package. The Army also buys fairly large quantities of frozen vegetables in bulk packages ranging in weight from 20 to 30 lbs. in multiples of 1 lb. each. These bulk packages are very useful in installations where 200 or more men are fed at one time. The bulk package has an additional advantage in that it (Continued on page 138)

5—This plain, bulk bag-in-a-case type of package also is approved and used by QMC. 6—When shipping cases are poorly sealed, a great strain is placed on manufacturer's joint and the cases may split at the corners. This photo was taken by the author during the tests made last year at Camp Blanding, Florida.



PACKAGING P



1 Frigidaire dealers are offering this complete Frozen Food Packaging Kit to home freezers all over the country through their local representatives. The kit slips out of a corrugated shipping carton and can be set up on the counter of the locker plant as shown. It is said to contain enough moisture-vaporproof packaging material to pack 175 items. The materials included are 75 pt. boxes, 40 qt. boxes, 100-ft. roll of cellophane, 50-ft. roll of stockinette, 15 6-lb. cellophane bags and a ball of string. An instruction sheet and inventory book are included. Pint and quart containers and assembling of kit, Interstate Folding Box Co., Middletown, Ohio. Cellophane, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.



2 "Cincy," a waterless wall cleaner made by Kutol Products Co., is now in a new fibre can—the result of three years of research and development because the container had to be moistureproof and airtight as this one is now claimed to be. The company has also developed special equipment for lining, filling and labeling the package automatically at a rate in excess of 125 per minute. Kutol claims that it has no intention of going back to the tin or glass container after the war because the fibre one is insulated and, therefore, keeps the cleaner cool and fresh longer. Fibre can, Queen City Paper Co., Cincinnati, Ohio. Label, Progress Lithographing Co., Cincinnati, Ohio.

3 A device which saves paper, time and labor is a welcome addition to any butcher shop in these days of shortages and, therefore, this Ripco Auto-Pak paper dispenser has found a place on many a retailer's counter. It holds 500 sheets of 10 by 10³/₄ in. greaseproof parchment. Made by Rhinelander Paper Co., Rhinelander, Wis.



4 A paper bag replaces the prewar tin for packaging Wright & Ditson Championship Tennis Balls. The single-wall bag is printed in red and black and sealed by means of a simple gummed tape which carries the Wright and Ditson trademark. Bag, Superior Lawrence, division of Union Bag & Paper Co., N. Y.



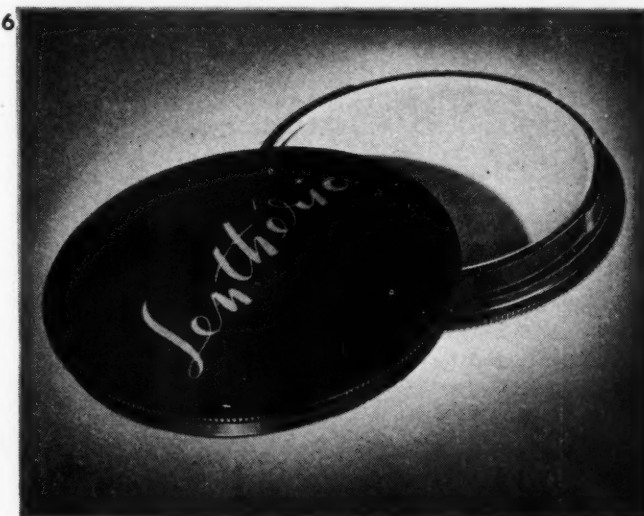
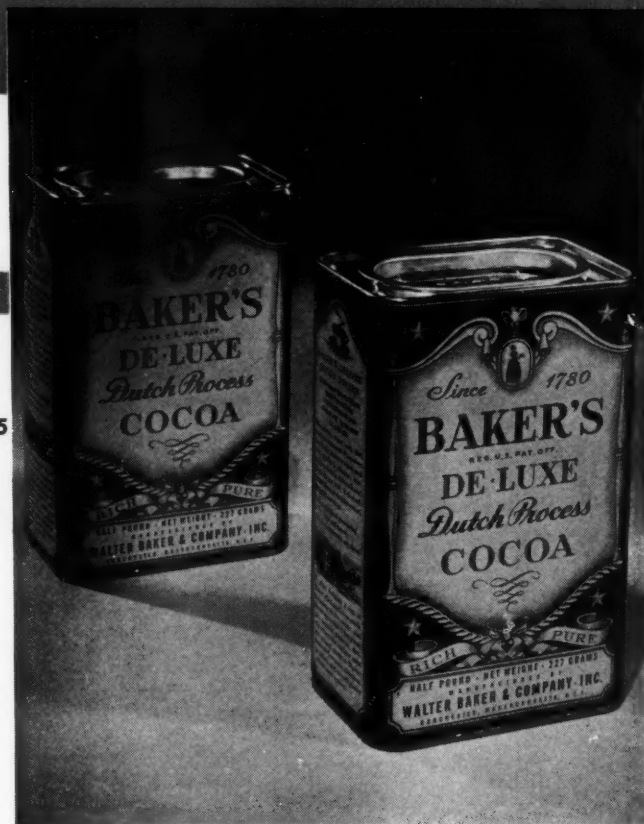
PAGEANT

5 In order to differentiate between Baker's Breakfast Cocoa and the company's new product, "Baker's DeLuxe Dutch Process Cocoa" the label on the latter departs radically in design from the familiar Pilgrim lady on the former package. The words "DeLuxe" and "Dutch Process" are reproduced in large print for further distinction. Labels, United States Printing and Lithograph Co., Brooklyn. Fibre can, American Can Co., N. Y.

6 Lenthéric has added a third make-up base to its "Soft-Focus" line with this cake make-up packaged in a black acetate container with the trade name inscribed in a turquoise-toned script. This makes another of a fast growing group of cosmetic manufacturers to adopt this type of container with the new, patented wedge-lock closure which can be opened or closed by a mere eighth of a turn. The cake filler is encased in a metal liner before it is packaged in the plastic.

7 Chow mein or chop suey vegetables are being quick-frozen and packaged by Breyers Ice Cream Co., Inc., in 1-lb., cellophane-lined cartons. The freshly prepared, hot vegetables are brought to the plant in large cans; dumped into hoppers, and packed before they can cool. As the package passes into the heat sealer it goes between two rollers which press it gently to evacuate any air bubbles which might be trapped in the bag. This, according to the packager, is a refinement worked out by the production department of the company, which keeps the package from "buckling" after freezing. Carton, Menasha Products Co., Menasha, Wis.

8 Yardley's Bond Street, all-paper powder box now carries an embossed top with the familiar "bee" design women have come to recognize on the molded closure of urea formaldehyde on the cream jar. The powder and make-up base come in matching colors and are meant to be sold together, therefore the similarity of labels. Box, F. N. Burt Co., New York. Printing, Continental Printing Co., New York. Plastic Cap, Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.





1—Bananas in 1-lb. blocks are sealed in LMS cellophane and labeled with recipes on reverse side of wrapper.

Dried bananas—packaged product saves shipping space

The difficulty of obtaining fresh bananas in wartime has resulted in a good reception, on the part of North Americans, for the products of Sanib Corp.—dried bananas and banana powder. The necessity for meeting the sudden, greatly increased demand for these products has given rise to interesting packaging problems.

Sanib's headquarters are in New York City. From its plant in Puerto Cortes, Honduras, are shipped more than 120,000 lbs. of dried bananas a month, to be sold, through wholesalers and brokers, in 1-lb. units packaged in LMS cellophane with lithographed paper labels encircling them.

The name Sanib is made up of the initial letters of "Sociedad Anonima Nacional Industria Banano" (National Industrial Banana Corp.). The business was initiated in 1936 with the construction of the Honduras plant. By 1937, banana powder was being produced and marketed in the United States, the consumers generally being pharmaceutical houses, hospitals and such industrial users as bakers and ice cream manufacturers. The product is being used increasingly as a baby food. In 1938, one of the firm's engineers designed a tunnel apparatus for partial drying of bananas and the company started small-scale production of the compressed product. A second tunnel-dryer was installed last year, doubling the plant's capacity. At first these dried bananas were marketed chiefly to industrial customers in 5-lb. slabs.

When the war brought about a shortage of fresh bananas in this country, due to lack of shipping space, Sanib began to experiment with 1-lb. packages for the retail trade, instead of the 5-lb. slabs. Now the product is marketed only in the

1-lb. package. It is distributed from Sanib's New York headquarters in cases of 25 packages.

In the Sanib process, the bananas are only partially dehydrated and then compressed into the compact brick-shaped package. The saving in shipping space is considerable, as a single 1-lb. package is the equivalent of a "hand" of 15 to 18 fresh bananas, and 10 packages represent an entire "stem." The bananas are weighed and packaged by hand on an assembly-line setup at the Honduras plant, then pasteurized.

The partially dried bananas resemble dried figs in appearance, and have much the same chewy consistency. They are eaten raw or chopped up in salads and dessert, either raw or cooked. The product has achieved considerable popularity in the United States and Canada.

A new label, supplanting the simple one formerly used, has just been produced and will appear on the packages within the next few months. It is lithographed in yellow, red and two shades of blue on white. A hand of bananas forms the focal point of the design, printed in yellow against the dark blue background, with the words, "Dried Ripe Bananas," in red ink superimposed on the banana illustration.

The new label has several elements not present in the old one. It has a rectangular block of descriptive information, under the title, "The A-B-C of Dried Bananas." This rectangle is white against a blue background; it has a red strip at the bottom bearing the message, "Recipes Attached to Label Inside." The A-B-C text is in blue ink with the exception of the capital letters A, B and C, which appear twice and are printed in red.

The "recipes inside" are printed on both sides of the end of the label, in vertical format, in blue ink. They are folded under and are not visible until the label is removed. There are directions for making banana pie, banana cake pudding, banana whip, banana nut cookies and banana tapioca.

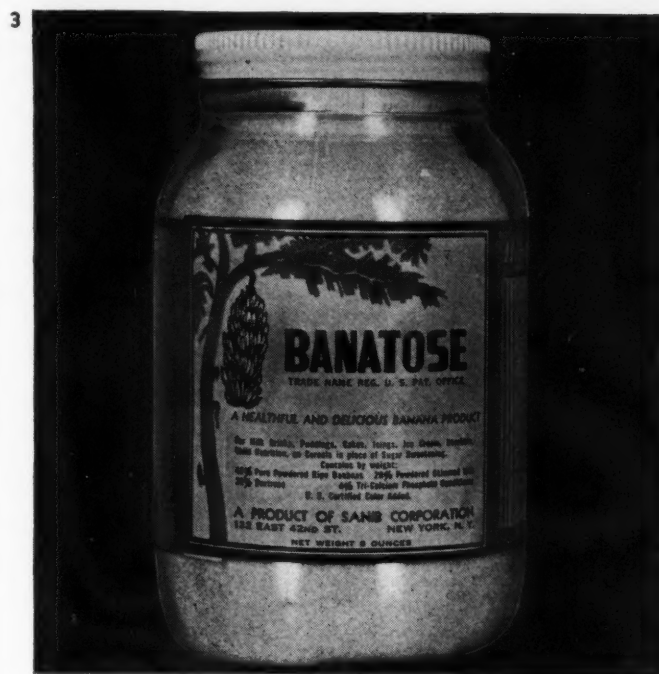
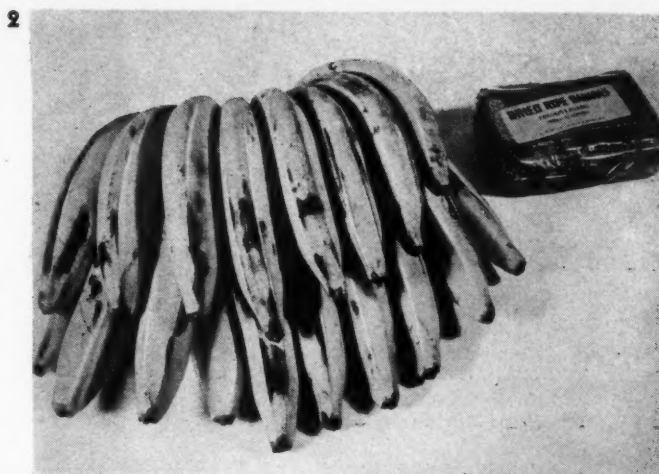
Sanib's Honduras plant also has a capacity of more than 50,000 lbs. a month of Sun-Ban, its pure banana powder. Sanib claims to be the only producer in the world using the spray-drier method of processing this product. A year's volume of 600,000 lbs. of powder represents a total of five to six million pounds of raw fruit.

The extremely hygroscopic banana powder must be packaged in airtight and moistureproof containers. Until recently the product was sent from the Honduras plant to the United States in protective laminated bags and was then packaged in New York, in air-conditioned rooms, in 100-lb. fibre drums, originally with tin tops and bottoms. A new system has now been inaugurated: the empty drums are sent to Honduras to be filled at the plant and are then returned to the United States, ready for distribution to the trade.

A product called Banatose, consisting of pure banana powder with dried skimmed milk, dextrose and tri-calcium phosphate added, also was introduced several months ago. Sold at retail in 8-oz. glass jars, retailing at about 35¢, it was designed for use in banana milk drinks, puddings, icings, sherbets and ice cream. This mixture is prepared from the imported powder and packaged in New York. It was first introduced in chain stores and super markets, and distribution was later widened to include fancy grocery stores and other outlets. Supply is now very short but will be improved.

These banana products are not war babies, but they have gained quick acceptance during the period of shipping shortage which made North Americans realize how much they had come to take for granted the availability of fresh bananas. From present indications, the dehydrated products will continue in favor even when shipments of fresh bananas are once more normal. They will enable our Latin-American neighbors to market surplus bananas which formerly rotted.

Credit: LMS cellophane, Sylvania Industrial Corp., Fredericksburg, Va.; label design and manufacture, Rode & Brand, N. Y.



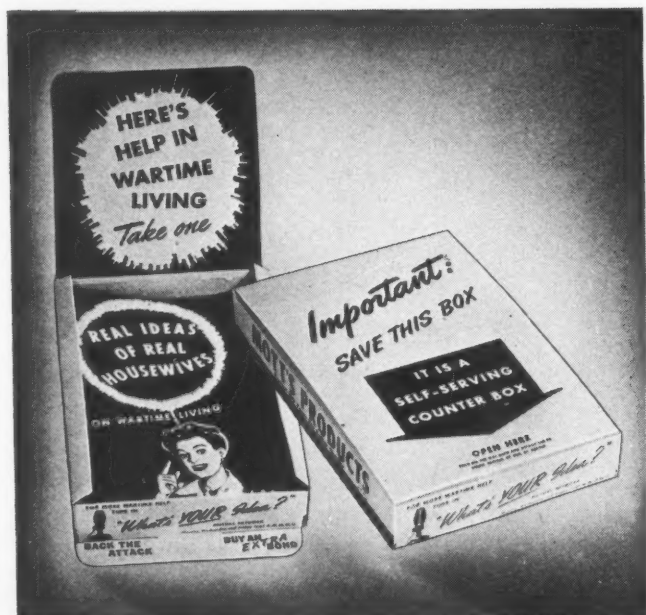
2—Package at right is equivalent of fresh bananas at left. This package has label now discontinued. 3—Completely dehydrated banana powder is packaged in 8-oz. glass jars. 4—Weighing, filling, sealing and labeling are assembly-line operations done by girl workers at the Honduras plant.

Display

Gallery



1 The pointing hand, done in brilliant yellow and bronze bas-relief on a black plaque forms the centerpiece of Gallagher & Burton's new window display which aims to keep the public conscious of the continuing necessity for carrying on here on the home front. A series of six side cards, two of which are shown here, each emphasizing a particular home front cooperative need, forms part of the display. All the side cards carry the "... and all's well!" tag line to tie in with the main portion of the display. Display, American Colortype Co., N. Y.



2 Duffy-Mott Co., Inc., has published a booklet planned to teach housewives how to help themselves and, incidentally, their grocers during this war period. The booklet contains suggestions gleaned from the company's radio program, "What's Your Idea?" Of particular interest is the self-service counter box into which 25 booklets are packed. As shown in the illustration, when the box is opened it makes an inviting display stand which can be kept by the cash register or checking counter. A little tab on the cover slips into a slit in the bottom of the box and provides a fairly rigid tilted stand. Display, Comly, Inc., Philadelphia.

3 A cut-out of a distressed commuter forms the centerpiece for this "new symptomatic" Anacin window display. It is reproduced in full color directly from a color photograph. Along with the main portion come several side pieces constructed individually so that the retailer can make up a display as small or as large as his space permits. The display department of the company makes the installation in about half the dealer outlets, but the display is designed so that dealers can set it up themselves in the other half. The cutout is shipped with the scrap paper-board still attached to protect the corners and edges. Display, Einson-Freeman, Long Island City.

4 A huge blow-up of a recent national Dermetics advertisement which appeared in class magazines is the basic merchandising theme used in this effective window display seen recently in New York's Grand Central Terminal. The deco-



rator-type drapery and the exotic use of lights and shadows emphasize the fact that the product falls in the luxury cosmetic class. Wooden letters, cut out and mounted, attract attention to the name of the product. Display, F. A. Russo, Inc., N. Y.

5 This sales-building package holder is offered to dealers by Swift & Co. to advertise its Sunbrite Cleanser. Full-color window posters, shelf strips and shelf pricers all with the same message, "Sunbrite Fights Greasy Dirt 3 Ways!" help to put the message across. The package holder, provided with an easel and meant for a prominent place upon the grocers' counter, is a cutout with a band superimposed on the bottom to hold a can of the cleanser. A space has been provided for the dealer to pencil in the price for three cans.

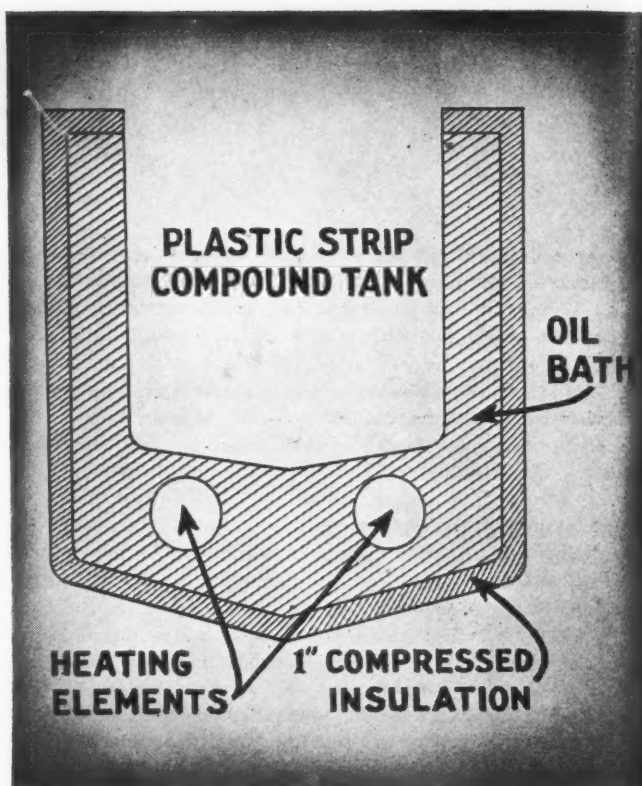
6 This "pin-up" girl is all set for a safe summer's work in her victory garden, according to the Norwich Pharmacal Co. The tube of Unguentine in her pocket will soothe the pain of sunburn and this display will sell the Norwich product for the druggist. The card was planned to fit a large or small window or to attract its full share of attention inside the store. Small price cards identify the various sizes to be included with the display to round it out. Display, Kindred, MacLean & Co., Inc., Long Island City.

7 The United Drug Co. evolved a very successful poster campaign based on its new "\$50,000 Chocolate," which, it is said, cost that amount in developmental research. Color photographs were made of eight designs. Carbro prints were then made and the background air brushed in. The unusual feature of the job was that the illustrations were blown up several times the size of the actual photos which created a problem for the photographer and lithographer in retaining the sharpness of detail in the texture of the illustration. The Rexall dealer was furnished with three complete sets of advertising material for spring, summer and fall so that he would have a fresh seasonal display throughout the year. Display, The United States Printing and Lithograph Co., Boston, Mass.





1



2

1—Design of new equipment permits addition of replenishing compound without stopping dipping or lowering temperature of melt. 2—Diagram illustrates new "double boiler" principle of heating, with circulating hot oil bath surrounding the dipping vat. Melt agitation and oil circulation methods are not illustrated.

New principles for heating plastic coating

Seldom has a new packaging method received such ready acceptance as that accorded the Ordnance Department's ethylcellulose dip, first described in the February issue of *MODERN PACKAGING* ("Plastic Skin," p. 64).

Since Ordnance's approval of the method as an alternate Method 1-A, for specified items, approximately 40 firms have qualified as approved users of the method and many more are seeking approval. More than a dozen companies are producing acceptable ethylcellulose compounds. New items are steadily being added to the list of those suitable for this form of packaging, and one branch of the service is reported to be giving it a separate specification classification. Many producers of tools, parts and similar items are considering the method for postwar civilian packaging.

Indications are that the plastic skin will shortly enter a much broader phase of usefulness as production difficulties, which so far have limited its application, are ironed out through the development of new equipment. Through the lessons learned in actual use, high-speed equipment for mechanical dipping is now being perfected.

Possibly the biggest bottleneck so far, however, has been the problem of temperature control in the melting and dipping tanks. Regardless of the specific ethylcellulose compound used, it has been found very necessary, for proper coating, to maintain the melt at an even temperature throughout the dipping tank and within a very narrow range of temperatures. With intensive cooperation by Ordnance

technicians, ethylcellulose compounders and heating equipment manufacturers, this problem now appears well on the way to solution.

Actual experience in the handling of the plastic stripping compounds soon indicated that standard heating equipment, such as that used in wax-dipping, would not suffice. Ethylcellulose compounds possess little or no heat conductivity; they are, in fact, almost complete insulators. They show phase separation at varying temperatures, will exude oil at other temperatures and, when improperly heated, will degrade rapidly to a point where use is prohibited.

It was a comparatively easy matter to design equipment that would maintain the required temperature either in the center of the melt or on the edges. However, the first units designed failed to give satisfactory uniform heat throughout the melt, due to the peculiar physical properties of the compound.

A conference of heating equipment manufacturers was called and ordnance stated the problem thus: It was necessary to perfect equipment for the proper heating, melting and dipping of ethylcellulose compounds with the material kept within constant temperature limits of 350 to 375 deg. F., and to safeguard this upper temperature it was required that neither the walls nor the bottom of the tank, at any spot, should exceed 390 deg. F. at any time during heating operations. These are iron-clad limits set by Ordnance specifications.¹

¹ PS 506 and Tentative Ordnance Specification AXS-1167.

Efforts to meet these requirements have generally fallen into two classes: those using *direct* heat through direct contact electrical strip heaters, with close temperature control, and those favoring *indirect* heating with a tank built on the double boiler principle. The latter represents a new and recent approach to the problem, and on the basis of preliminary tests seems to be favored in the recommendations of the ethylcellulose compound manufacturers, who state that indirect heating reduces the tendency to burning of the compound on "hot spots." However, certain improved types of direct heating tanks also are proving satisfactory to the Ordnance Department.

One of the most interesting of the indirect heating tanks is that developed by the Aeroil Burner Co., Inc., West New York, N. J. This unit is described here as being typical of a good application of the indirect-heat principle. It has some unique features.

The Aeroil tank, of the "double boiler" type, uses a bath of hot oil, circulated constantly under force, to provide a constant application of even heat underneath, around and within the plastic melt. Temperature of the heat bath is thermostatically controlled, and in tests by one user is said to have shown a variation of no more than 3 degrees, plus or minus, throughout the run.

A cut-away diagram (Fig. 2) shows the construction of the tank. The completely insulated outer tank holds about 15 gal. of highly refined and filtered heat bath oil with a fire point above 700 deg. F.

In addition to circulating along the walls and the bottom of the inner vat, the hot oil is piped through tubes strategically located along the length and width of the inner vat, so that heat can be maintained constantly throughout the melt itself. There is said to be little, if any, temperature variation between the heating tubes and any spot on the walls or bottom of the tank.

An inch of compressed insulation all around the tank and the removable cover speeds initial heating and reduces heat loss when current is shut off during non-operating hours. In a test run, the manufacturer states, the melt lost an average of only 10 deg. F. per hour with all current shut off throughout an overnight stoppage of the dipping process. With the thermostats set very low, the compound can be kept in a semi-molten condition so that the unit can be ready for operation in slightly over an hour of preheating on the following day.

An interesting further development by this company is the use of air agitation of the oil bath, which, it is said, facilitates uniform heat spread through the oil, increases sensitivity of the thermostatic controls, and results in a more efficient transfer of heat from the bath through the walls of the inner tank. The outer tank is equipped with a perforated pipeline with a ball check valve, a pressure-reducing valve, and an air cock. Only minute quantities of compressed air at a few ounces pressure are required.

The inner tank containing the melt is equipped with a similar perforated pipeline with pressure-reducing valve and air cock to permit periodic agitation of the melted compound should local operating conditions disturb the automatic agitation that results from the special design of the tank.

Under normal operating conditions, with regular dipping going on, artificial agitation of the melt is not necessary with this tank. During the initial heat-up period and after the plastic is melted, should dipping be interrupted or a cold draft hit the liquid surface, it is claimed for preheated compressed air agitation that it will speed melting and keep the temperature uniform. Infra-red lamps are not needed.

The manufacturer claims conclusive proof that, in addition to facilitating the heat transfer, the agitation of the oil minimizes coking, since it tends to keep the oil moving away from the source of heat. On the basis of his own tests, the manufacturer claims, also, that the agitation of the melt gives better heat distribution and greater consistency of the compound. The Ordnance Department is checking on these two points independently, and is expected to release its findings shortly.

Two thermostats control the temperature of the oil bath at any desired point from 100 deg. F. up to the exact temperature that will keep the compound at the proper operating heat as designated by the manufacturer's formulation. Controls are rigid contact type, two-pole, shockproof, equipped with dial knob and independent pilot lights. A built-in dial thermometer is provided for each checking of oil bath temperature.

Means of adding new material to the melt without reducing the temperature of the melt has always been a problem. Aeroil experimented with the accepted method of having a "mother tank" to preheat the chunks of ethylcellulose compound and feed replenishing melt into the dip tank. It was concluded, however, that any such arrangement of tanks involved certain inherent difficulties in the way of cumbersome equipment. Furthermore, it was decided that the elimination of the mother tank and the use of one piece of equipment for the three steps in the process—heating, melting and dipping—would offer advantages in cost, availability of materials, and operating efficiency.

The solution was found in the (Continued on page 140)

3—Inside of tank shows adjustable, removable partition. Electric heating elements are immersion type with liquid-proof covers, heating coils sealed within steel blades.



Wartime gift ideas for candy



Drury Lane Chocolate Co. has done an outstanding job in scouting the market for mirror boxes, glass, pottery, basketry and other novelties that have enabled them to keep gift lines alive despite shortages.

Despite priorities, material shortages and other hurdling factors that meet the manufacturer on every hand today, the Drury Lane Chocolate Co. of Brooklyn has assembled an array of gift packages that show real ingenuity in finding containers that are available and adapting them to requirements.

The packages are planned to sell not only to the man of the family—the usual candy buyer—but have double usefulness as far as women and children, the recipients, are concerned.

While there is nothing remarkably original about this idea, it is a definite achievement to keep such gift lines going these days.

Drury Lane has done it by scouting in the market for all kinds of novelties that can be converted into candy containers with re-use value. Sometimes these are simple, home-made baskets; sometimes, interesting pieces of pottery or glass; sometimes, wooden boxes; sometimes, leatherette. Hand-made toy animals and dolls are used as carriers for the candy. The packets of candy, for example, are wrapped around an elephant's neck or under a doll's arm.

The company was also able to find a number of boxes made with mirrors. These have been made up in both rectangular and oval shapes and have many uses in the home after the candy is gone. The box maker surmounts the shortages by using cutaways—small pieces cut from larger mirrors that would otherwise be waste. The mirror lids are enhanced by painted floral decoration and colored rayon ribbon ties to

match or contrast with the delicate colors of the flowers.

A glass container becomes a cookie jar after the recipient has finished the original contents. Animals that become banks are real leaders when a father or grandfather purchases candy. A small pottery container eventually becomes a casserole that will hold an individual portion of baked beans or Lobster a la Newburgh. One of the more expensive containers is a leather jewel case. The leather is thinner than before the war and is fastened over a cardboard frame that in pre-war days would have been wood. Trade identity is maintained by means of label tags affixed to the ribbons that tie the packages.

"Limitation is always a challenge," said M. A. Jaret, general manager of the company, "and it is in times like these that ingenuity must come to the fore."

Drury Lane has developed its business to a high degree among department stores throughout the country. After the war they plan to extend this type of distribution as well as that in smaller shops in hotels and railroad terminals, with particular emphasis on the territory within a few hundred miles of New York. This will make for easy shipping facilities and a concentrated distribution. Gift packaging for this extensive over-the-counter market is therefore very important, particularly in normal times, to their continued success. Mr. Jaret has a keen interest in decorative packaging for postwar business and predicts many possibilities in this field for plastic containers that will be less expensive and more practical.

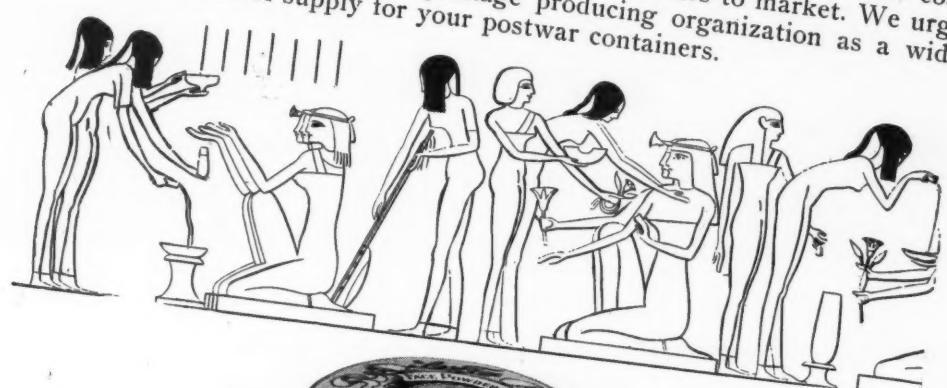


EGYPTIAN WOMEN AND MODERN PACKAGES

Even in old Egypt, many thousands of years ago, women spent a great deal of time at their toilets. They had all sorts of cosmetics, powders and creams. But, of course, they couldn't go down to the corner drugstore and order what they wanted. One reason, aside from the fact that there were no drugstores as we know them, is that there was no packaging industry to serve cosmetic manufacturers. Just as each preparation was hand made so was each container.

Contrast this with today's wide facilities in packaging. Even the old powderbox shown on this page and which we consider "old-fashioned" was really a very modern package.

Of course, modern designs are different and we have stepped up production amazingly. Today we produce cosmetic containers and other packages in round, square, oval and oblong shapes completely automatically from beginning to end. They are produced at high speed and at low cost and they go to carry products of many manufacturers to market. We urge you to consider this modern package producing organization as a wide potential source of supply for your postwar containers.

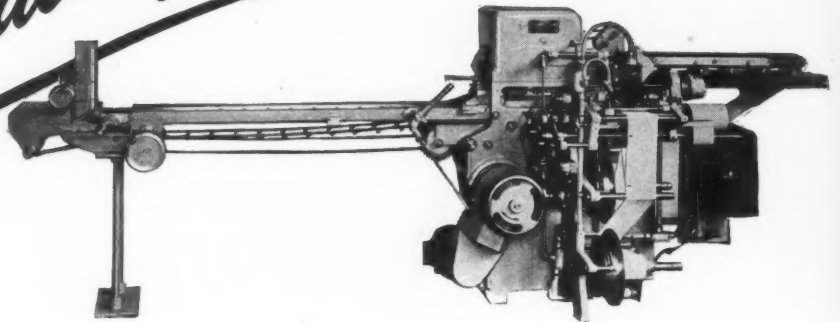


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 New York City Kansas City St. Louis Atlanta Chicago Los Angeles
 Boston Cleveland Cincinnati Memphis New Orleans Minneapolis
 220 Bush Street SAN FRANCISCO Telephone: YUkon 0376
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 CANADIAN DIVISION.
 Dominion Paper Box Company, Ltd. 469-483 King Street, West, Toronto 2, Canada

*There's a lot
going on here...*



*that will lead
to better packaging*



Some types of war work will have a particularly valuable peacetime carry-over... We can see that in our own plant. For it so happens that the larger part of the equipment we have built for war has called for a high degree of inventive ability and engineering skill. The advancements made in mechanical design, as well as the ideas gathered in the course of this

work, will be reflected in our post-war packaging machinery.

We'll be glad to study your requirements now, with a view to supplying you with the most modern types of machines at the earliest permissible date... *Our post-war plans, you see, must be keyed to our customers' needs.*

Get in touch with our nearest office

PACKAGE MACHINERY COMPANY, SPRINGFIELD 7, MASSACHUSETTS
NEW YORK CHICAGO CLEVELAND LOS ANGELES TORONTO

PACKAGE MACHINERY COMPANY

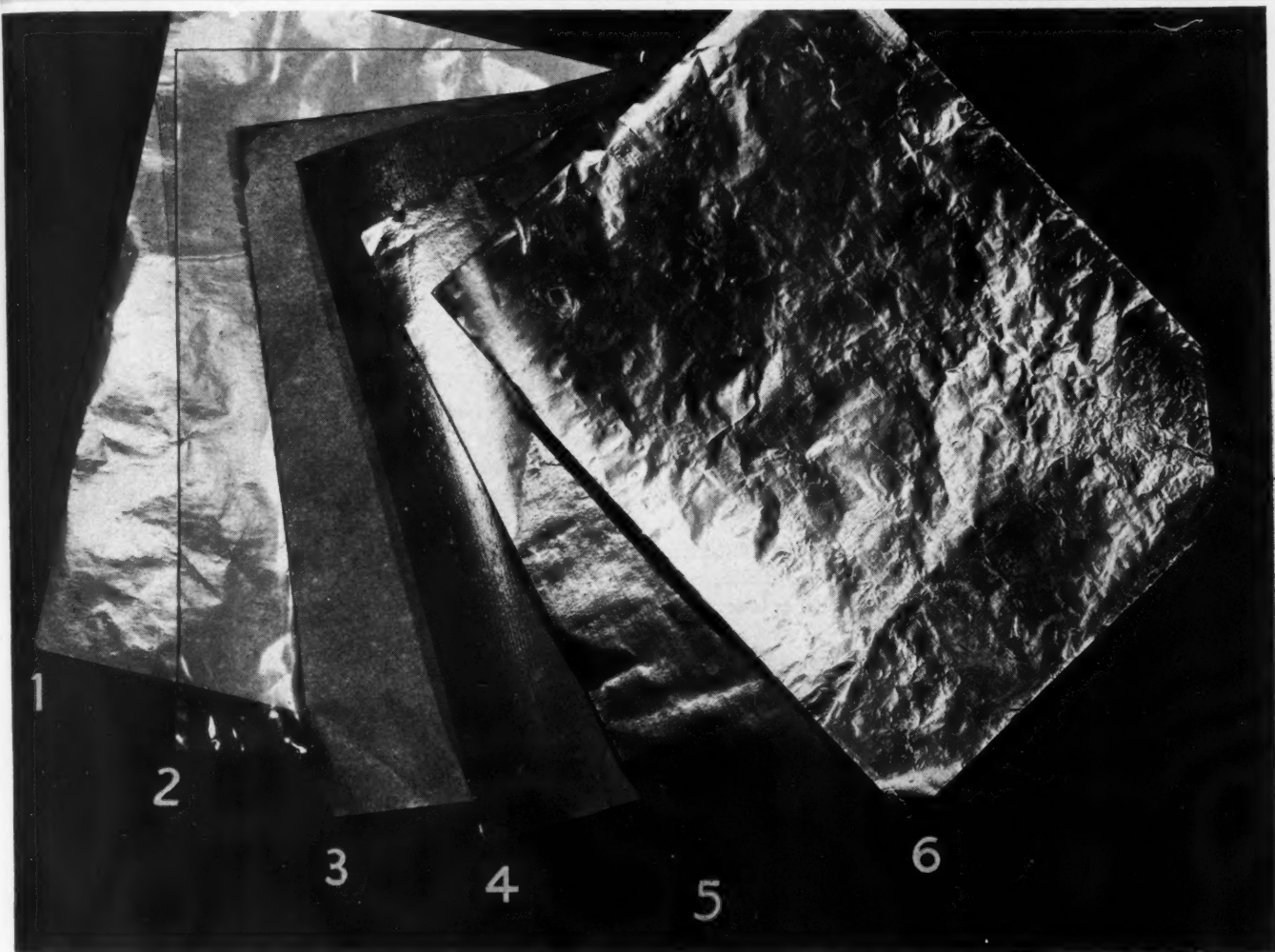
Over a Quarter Billion Packages per day are wrapped on our Machines

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TECHNICAL
EDITOR

CHARLES A. SOUTHWICK JR.



Typical examples of multi-function laminated packaging materials; each has its special applications.

LAMINATION—I. Theory and composition

by Charles A. Southwick, Jr.

Lamination is the process of combining two or more plies of materials into a single structure by means of an adhesive composition between their inner surfaces. By this process combinations of materials can be formed which possess new and better functions and workability than their single elements.

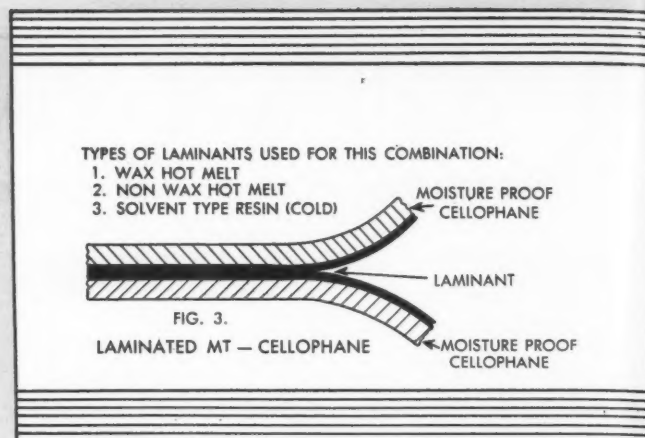
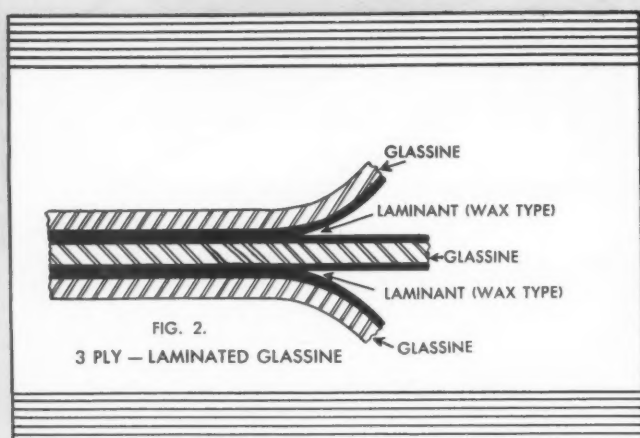
Lamination makes it possible to form a structure with high levels of many kinds of functions depending upon the choice of ply material and the kind and formulation of the adhesive or laminating agent. The choice of ply materials controls the strength and durability of the finished structure and the kind

and degree of chemical function which it will finally perform.

The laminating agent contributes little or nothing to actual strength but its composition will affect pliability and durability, and in many cases is the determining factor in the chemical functions of the final result.

There are many packaging materials which, by themselves, do not provide sufficient function to be either satisfactorily or effectively formed into a package. By laminating these materials, it is possible to develop a final combination for a variety of functions not otherwise possible.

It is a well-known fact that there are certain limitations in



the use of surface-coated materials which affect their use in many package-forming operations. For example, because of the difficulty of adhesion and the fact that surface coatings are subject to abrasion, it is not always possible to develop sufficient mechanical strength and other functions in a single coated sheet. However, by modifying a coating material to give the same functional characteristics and greater adhesive qualities, the material may be used as a laminating agent and can be applied as a continuous film between two plies of paper, cellophane, etc.

The final result will be a laminated combination, then, that has greater durability because the film is protected against abrasion, fractures by folding, and furthermore can be adhered by conventional adhesives. Such a resulting structure also has good working characteristics because it is softer and has less surface smoothness. The most important element in a compound laminated structure is the material used between the plies because the choice of this material determines the pliability and resistance to delamination in use. Also the choice and formulation of this laminant determines the kind of equipment on which the material must be made and the quantity that must be applied for the most efficient development of any particular function.

A very good example of a laminated structure which has found increasing commercial use consists of two plies of glassine paper combined with five pounds per ream of a waxy laminating agent. Glassine paper, in itself, is greaseproof and flavor-tight, but in normal weights it does not possess great physical strength and it has no resistance to the transmission of moisture vapor. By combining two glassine sheets with a continuous layer of a waxy laminant, the resulting structure possesses all of the attributes of the original sheets and also has greater pliability, plus a low level of moisture-vapor transmission.

If these same functions were accomplished by means of surface coating of a waxy type, it would necessitate a heavy glassine sheet with added plasticizer and this material could not readily be used in fabrication operations because it would require special adhesives and the surface coating would be very susceptible to mechanical abrasion and degradation.

Any metal foil, resinous or cellulosic film, paper, cloth, etc., may be used for the plies of a laminated structure and in many cases combinations of dissimilar materials are necessary to develop the necessary functional properties. Further-

more, laminated structures can theoretically possess any number of plies, although cost and other practical limitations usually limit this number to three or four. There are, however, some limitations as to the kinds of materials which can be laminated together, because of differences in dimensional stability, effect of heat or aging. For example, a combination of non-moisture-proof cellophane to a plastic film, such as Pliofilm, would result in a laminated structure one side of which would be affected by dimensional changes depending on the humidity of the air, while the other side would be independent of such dimensional change. The resulting combination would be prone to curling, puckering, and would be extremely difficult to fabricate.

It is also not advisable to try to laminate plastic water-insensitive films with aqueous adhesives because such adhesives are usually less plastic than the films themselves and would not provide the strength and durability of bond necessary to develop the maximum durability of the finished structure.

Resinous films or plies with heat sealing coatings should be laminated with an agent which has a sufficiently high melting point or suitable flow characteristics so that the agent is not squeezed out of the area at the point of heat sealing. A good example of such a combination is laminated Pliofilm, which is used for Method II packaging of airplane engines, etc. This structure consists of two Pliofilm sheets combined with a moistureproof laminating agent, which is so formulated that it does not melt or flow when the Pliofilm is heat-sealed and, furthermore, maintains its ply strength at the heat-sealing areas. The latter is a very important point, because if the laminate is dispersed or otherwise effected at the heat-sealed areas the finished seam will show delamination or will not have sufficient strength for the outer ply to carry its proportional part of the load—in other words, the inner ply alone would be forced to carry the stresses resulting from filling, handling and shipping, and the delaminated areas around the seal would have a lower resistance to the transmission of water vapor than the original structure.

The plasticity of the laminant should be such that it will not harden or crack at the temperature at which the final structure will be used. Such an embrittlement or limitation of the working temperature range of the laminant would result in either delamination of the plies or actual perforation of the plies if the structure were flexed or creased.

TABLE I—LAMINATING AGENTS

Type	Example	Function	Use	Remarks
Aqueous solution	Dextrins. Animal glue, etc.	Greaseproofness. Great strength	Usually for greater strength and stiffness	Low cost. Water to be removed after combining. Usually used on papers or water sensitive materials
Emulsion	Rubber (Latex), resinous, etc.	Waterproofness (limited). Limited water-vapor resistance	For absorbent sheetings and paper	Water to be removed before or after combining. Usually used on papers or water sensitive materials
Solvent solution	Resins or gums, synthetic and natural rubbers in solvent solution	Wide range of water-vapor resistance, waterproofness, greaseproofness	Wide range of flexibility and durability	Solvent to be removed before or after combining. High unit cost. May be used with any material depending on choice of formulation and application techniques
Heat liquefied	Waxy, asphaltic, or resinous mixtures	Wide range of water-vapor resistance, waterproofness, greaseproofness	Wide range of flexibility and durability	Low to high unit cost. May be used with any materials. Wide range of application, temperatures from about 140° F. to 400° F. depending on composition. The so-called "hot melt" types are used at the upper part of this temperature range

Many laminated structures appear to be more flexible than the original materials because of the increased bulk and weight, but the true value of such plasticity can only be ascertained by exposing the finished structure to low temperatures. Flexing at various low-temperature levels will show that a temperature will be found at which either the laminant or the plies will fracture or become brittle independently of each other. It is not possible for the plies or the laminant mutually to plasticize each other and give a lower working temperature than either possesses independently. There are cases where the plasticizer of either the plies or laminant will migrate from one component to the other. If this occurs, embrittlement of the laminant results if its plasticizer migrates into the plies or softens if it gains plasticizer from the plies.

In either case, the laminated structure is degraded because the more brittle laminant will limit the working temperature range and a softened laminant usually loses its adhesive strength and delaminates at heat seals or at edges.

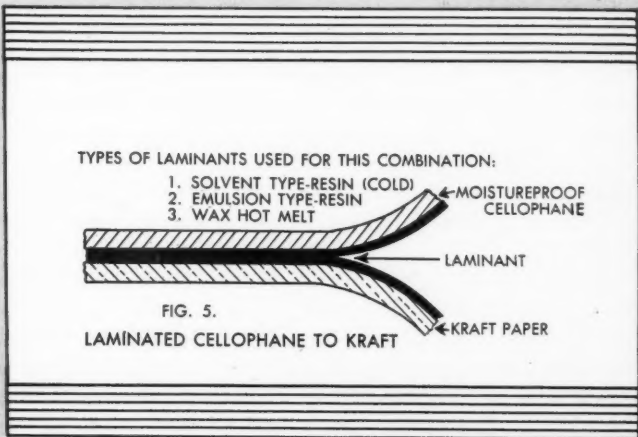
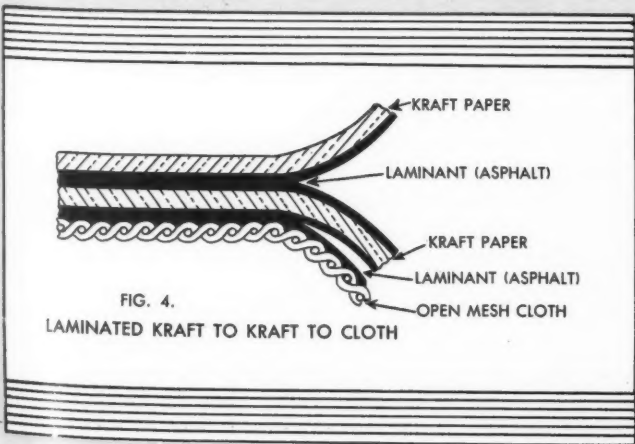
The above chart briefly tabulates the characteristics

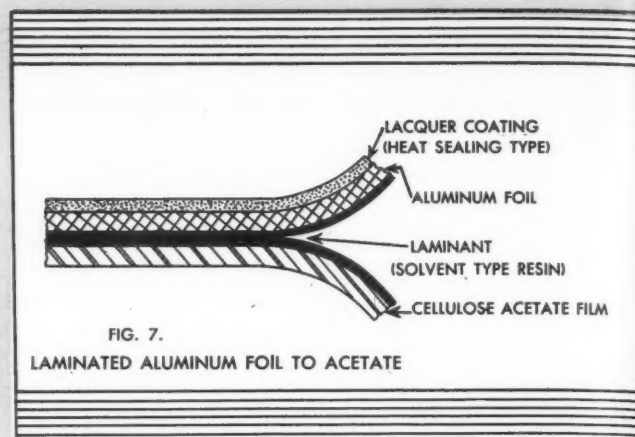
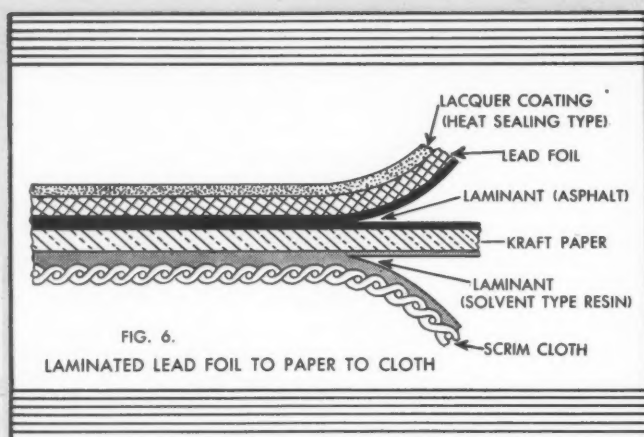
of different types of laminating agents, their properties and uses.

This chart is not a complete pattern of all laminants because there are many possible combinations of materials and types. For example, an aqueous emulsion can be made of a resin mixture dissolved in a solvent. Such a laminant would perform in some respects like both an emulsion and a solvent type depending on the ply material, the composition, and the choice of solvent. Also, each type of laminant is susceptible to a wide range of formulations which affect its operating, functional and use characteristics. Thus there is the possibility of considerable overlapping and duplication in use between each of these types of laminants.

The type of laminant is determined by the kind of ply materials, the functional and use requirements of the finished structure and the equipment available for its production. The particular formulation of any type of laminant depends on the surface characteristics of the plies, the equipment for and process of making the lamination.

Any laminant must be formulated and adjusted to satisfy





all of these factors to achieve an effective and durable finish structure. This adjustment of laminant is less critical if each ply is of the same material but becomes more critical as the plies differ in kind. For example, many types and formulations of laminant can be used to combine two sheets of kraft paper. However, if the combination is to be a kraft sheet and a rubber hydrochloride film, for instance, the choice of effective laminants is immediately limited. The formulation must be carefully made and the equipment must operate with more precision and in a different manner than before. A laminant to adhere two distinct kinds of material must have the unusual property of having adhesion to two chemically and physically different surfaces. One surface may be water-wettable and porous, such as paper, while the other may be water-insensitive and smooth, such as a metal foil or certain resinous films. One surface may be wettable by solvent (a vinyl film) while the other may be smooth and solvent-insoluble (a metal foil).

The best way to appreciate the problem of the proper choice and composition of laminants is to dissect critically certain characteristic laminated materials which are performing outstandingly in civilian and war packaging. Examples of six materials are shown in Fig. 1.

Example No. 1 is a triple-ply glassine structure which has very low water-vapor permeability, high greaseproofness, and good package-forming characteristics. This structure is made by using approximately five lbs. of a waxy laminant per ream (3,000 sq. ft.) between each pair of plies of glassine. The laminant in this case is applied to the glassine stock above its melting point so that it has been completely liquefied. The second glassine sheet is brought into contact with the laminant and the combination run over cool rollers. This process is repeated twice to achieve a double lamination. The waxy laminant gives the sheet its plasticity and its moisture-vaporproof function. The laminant is formulated to have good adhesive qualities and to achieve whatever mechanical durability may happen to be required of the finished structures.

Example No. 2 is a laminated cellophane which possesses high physical strength, softness, greaseproofness, and a low level of water-vapor permeability. This structure is similar to the glassine structure described previously except that it is a single lamination and in this case the laminating agent has been modified to have greater adhesive qualities because the

cellophane surface is more highly finished and has a moisture proof lacquer coating. This particular laminant is a hot-melt type composed of paraffin wax with suitable modifying agents. The laminant contributes additional moisture-vaporproofness, since in this case two moistureproof cellophanes are used.

Example No. 3 is a double-laminated structure which has been developed for high physical strength and waterproofness. This consists of two plies of wet-strength kraft-to-paper laminated with an asphaltic compound. This sheet is in turn laminated with an asphaltic compound to an open mesh cloth or scrim. The purpose of the cloth is to impart high tear resistance and general durability. The kraft adds additional physical strength and body to the sheet while the laminant resists the penetration by water. The laminant is formulated especially to give limited penetration into the kraft, however, since it is applied at a temperature above its melting point.

Example No. 4 is a combination of kraft paper and a moistureproof cellophane. This particular structure was developed to make a strong greaseproof wrapper for metal parts packaging. The greaseproofness is provided by the cellophane, the strength by the kraft, and the laminant in this case performs the simple function of combining mechanically these two plies into a workable combination. This laminant is a solvent type carrying suitable synthetic resins formulated to give great adhesive strength and low temperature durability. This structure was made by applying the laminant to the cellophane, removing most of the solvents and then combining to the kraft while the adhesive was still in a plastic condition.

Example No. 5 is a three-ply structure being used extensively for Method II packaging of war materials. This consists of a coated lead foil laminated with an asphaltic compound to kraft paper. This combination is in turn laminated in a scrim cloth applied to the kraft side with a solvent-type resinous adhesive. This finished structure is an excellent example of a multiple function which can be obtained by the ply members and the laminants. This sheet has substantially zero water-vapor permeability, is completely greaseproof, waterproof, and has very high mechanical strength and durability. Furthermore, it is very easy to form into an efficient package because the lead foil side has been coated with a heat-sealing lacquer. The lead (Continued on page 146)

Penetration of packaging materials by insects

by E. O. Essig, W. M. Hoskins, E. G. Linsley,
A. E. Michelbacher and R. F. Smith*

The importance of a thorough understanding of the biology and control of stored products insects in connection with the food situation in the war effort, with regard to the supplies for the armed forces and civilian population in our country and those of our allies, has been evident for some time. However, the situation now has become critical for at least five distinct reasons: viz., (1) the necessity for storing dried, dehydrated and cured foods in great quantities for considerable periods of time; (2) the difficulty of obtaining suitable packaging materials that will endure rough handling and remain vapor tight, and also completely resist the attacks of insects;¹ (3) irregularities in cleaning and disinfecting storage warehouses and transportation facilities, particularly freight cars, barges and cargo ships; (4) the hazards of insect infestation and contamination on shipboard during transit, which requires weeks and even months of temperature and moisture conditions extremely favorable to the development of insects; and (5) the tropical climates with their large numbers of insect pests which attack all kinds of edible products. Frequently these materials must be dumped in areas where exposure to high temperatures and rain make them even more susceptible to infestation.

The recognition of these problems as vital to the success of the war effort resulted in the organization of a group in the Division of Entomology and Parasitology, University of California, at Berkeley, to formulate a project covering the general scope indicated above.

Accordingly suitable quarters consisting of dark rooms and laboratory facilities for rearing stored food products insects were set aside, and equipment, especially rearing containers and temperature and moisture control apparatus, was installed. Cultures of some 20 species of stored food insects were already available and formed a nucleus for the present investigation.

Early in 1942 new types of packaging materials designed for use as substitutes for metal containers were being tested at the U. S. Dept. of Agriculture, Western Regional Laboratory, Albany, California, and the problem of testing such materials for insect penetration and infestation was referred to our group. The work soon resolved itself into two main projects: (1) studies of the biologies and food habits of the insects, especially in relation to dehydrated products, and (2) the testing of packaging materials in relation to insect penetration, contamination and infestation.

The work was further augmented by information obtained through participation in Regional Dehydration Training Schools conducted under the auspices of the Agricultural Research Administration, the Bureau of Agricultural Chemistry and Engineering, and the Agricultural Marketing Admini-

* Of the University of California, Berkeley. The authors wish to express their sincere appreciation to Prof. W. V. Cruess and Dr. E. M. Mrak, Division of Fruit Products, University of California, and Mr. A. L. Pitman, Western Regional Laboratory, U. S. Dept. of Agriculture, Albany, California, for their hearty co-operation in this work. Without their assistance the study could not have been satisfactorily undertaken.

¹ Infestation by insects is not necessarily the primary consideration since penetration without infestation may be equally serious in that it both destroys the moistureproofness of the container and allows other organisms to enter.

Because it lays the groundwork for a continuing study of great importance to packaging, this article is reprinted from the Journal of Economic Entomology, with the kind permission and co-operation of Dr. L. M. Peairs, of the University of West Virginia, who is editor of that technical journal.

stration of the U. S. Department of Agriculture held at Albany, California, and Rochester, New York, in September and October 1942. Requests for testing packaging materials have been received at ever-increasing rate, not only from the armed forces, but also from commercial manufacturers, distributors and users of packaging materials.

Insect penetration of packaged foods is not a new problem but has been previously investigated, mostly with dried fruit, by several workers including Parker (1913, 1915) and Myers (1927). More recently Stracener (1938) has reported tests with multiwall, metal strip-sealed bags for milled rice and Hickin (1942) noted penetration of transparent cellulose film by *Pinus*.

Method and techniques

In connection with the packaging experiments stock cultures of 32 species of stored products insects are maintained continuously. The insects are largely reared in gallon glass mayonnaise jars with muslin lids to allow relatively free passage of air. By varying the foods, humidities and temperatures according to the requirements of the various species, large numbers of insects are available for biological studies and penetration tests. The major portion of the cultures are maintained in a room having a north exposure in a granite building. The temperature ranges from 67 deg. F. to 83 deg. F. and the relative humidity averages approximately 60%. At the present time penetration studies are being conducted with approximately 15 species of insects. Although the rearing methods as regards moisture content, amount and kind of food, places for pupation, etc., vary somewhat with each species, the cadelle may be used as an example of our rearing methods.

Large numbers of adult beetles are introduced into 20-gallon ash cans half filled with rolled barley. The bottom two or three inches of food is dampened to the consistency of wet mash. Strips of cello-cotton are placed in the culture for ovi-position. From time to time these strips are transferred to other jars of moistened rolled barley. The larvae develop rapidly on this diet and large populations may be obtained in a short time. Rolled barley is apparently an adequate food and has the further advantage that larvae may be readily separated from it. Yeast and dried skim milk are

sometimes added to supplement this diet. When adults are desired, strips of Cellotex or corrugated cardboard are placed in the culture to provide places for pupation.

Since preliminary tests showed that large larvae of the cadelle, *Tenebroides mauritanicus*, are more aggressive in entering packages than any of the other insects available, these were used as the test insect in most experiments. This species has long been known as a borer in wooden structures in granaries, storage bins, warehouses and ships and is reported to penetrate various packaging materials such as sacks, parchment, cardboard and even waxed and other papers (Back & Cotton 1926b). As is the case with most stored food pests populations are likely to reach high levels where there is a lack of sanitation. Under these conditions structures may be riddled by their boring.

Certain points may be kept in mind regarding materials to test for resistance to penetration by insects. It is highly desirable at the present time that results be of practical value and hence tests must be limited more or less closely to materials now in use or readily available in large enough quantities.

Numerous factors doubtless influence readiness of penetration, among which the following are certainly of importance: (a) nature of the material, e.g., metallic, wooden, paper, synthetic; (b) thickness of the packaging material—single or multiple layers, especially those built up from sheets of different materials; (c) effect of creases, folds, corners, scratches; (d) chemical treatment and addition of mechanical agents such as abrasive powders.

Materials to be tested are usually in the form of small packages (approximately 3 by 5.5 in.). Tests of these small packages are made in gallon jars. Ash cans are usually used for larger packages. In either case the bottom of the container is covered with a disk of kraft paper to provide more secure footing for the insects. If contaminated conditions are to be simulated a small amount (10 to 50 grams depending on size of container) of whole wheat flour is sprinkled on the paper disk. This contamination provides the insects with food and a place to hide, and more closely simulates storage and warehouse conditions. Contamination is usually used with the various flour beetles and lepidopterous larvae. Small packages are either used in pairs or tested singly. In the latter event they are wrapped with a layer of kraft paper held in place with a rubber band or heavy cord. Here again usual storing and packaging conditions are simulated in order to give the insects more secure footing on the package. Flour is not placed directly on the package since it is possible that this might affect penetration of the packaging material.

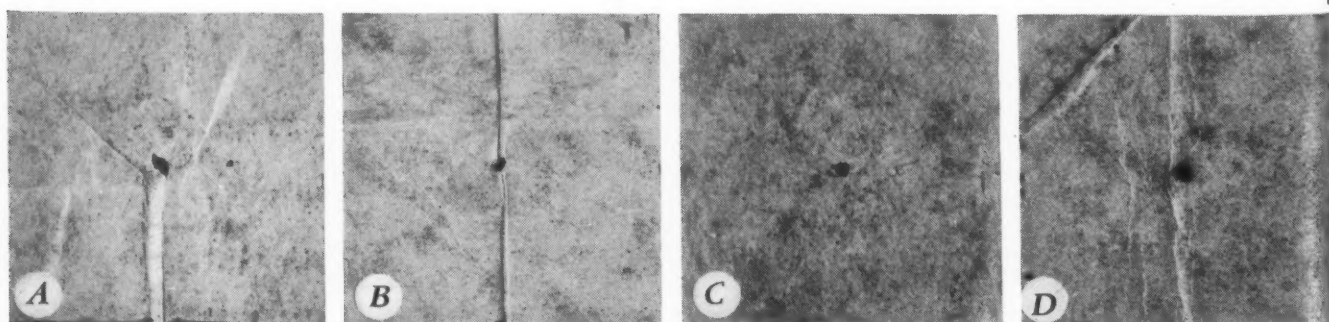
The number of insects utilized in each container depends on the species involved, other species which may be utilized in the same test, the developmental stage of the insect, the size of container and the size of the package. Under most conditions of testing 10 cadelle larvae or 25 individuals of some other species were regarded as testing units for each gallon jar.

The number of insects utilized were thus relatively large to allow a reasonable chance of penetration in case of high mortality. However, since under storage conditions the number of larvae might be unlimited, a better procedure for the test would be to keep the population constant. This is now being done in further tests not yet completed. Lower concentrations also are being used. Frequently combinations of insects were tried. Thus cadelle larvae and saw-toothed grain beetle adults were sometimes used together. Where the larvae of the insects were free-living usually both adults and larvae were utilized. In the case of moths, however, only larvae were introduced into the cultures. Packages up to 50 lbs. net have been handled in large ash cans. Penetration tests were conducted in a room which was maintained constantly at approximately 50% relative humidity and 80 deg. F.

Packages were given a preliminary examination at the end of two weeks. If they showed any external signs of penetration they were opened and examined from the inside. Containers such as the Bemis bag with several liners must be examined layer by layer. All surfaces were carefully examined and small holes detected by passing the material over a bright lamp or other suitable background. Scarification and penetrations were noted and classified according to position (top, bottom, side) and type (made in fold, crease, smooth area, seam, etc.). Finally the contents of the box were examined for insect infestation. Where possible replicates were made and the length of exposure varied from two weeks to three or more months.

In experiments with chemical repellents small packages, approximately 1 by 2 by 4 in. in size were made from paper towelling which was first dipped in a solution or a suspension of the desired chemical in a soft wax (No. 2305, Western Waxed Paper Co.) kept molten in a deep trough in a boiling water bath. The paper was then drawn through a simple press made of two pieces of quarter-inch glass tubing in vertical slots about 6 in. apart and kept in rather close contact by a lead weight set in each slot. Live steam was passed through the tubes to keep them hot. The amount of wax solution left upon the paper varied but little as indicated by these sample data:

1—Illustrating penetrations by the larvae of the cadelle in metal foil bags enclosing cartons of dried fruit. A, shows penetration at the corner of the package; B, shows penetration at the crease; C, shows penetration of a smooth, unwrinkled surface; D, shows penetration along a fold. Magnification X 0.63.



Weight of paper towelling per sq. in.	Weight of paper plus wax and chemical per sq. in.	
	A ^a	B ^a
0.0361	0.1131	0.1207
0.0367	0.1091	0.1166
0.0367	0.1025	0.1187
Ave. 0.0365	Ave. 0.1116	Ave. 0.1187

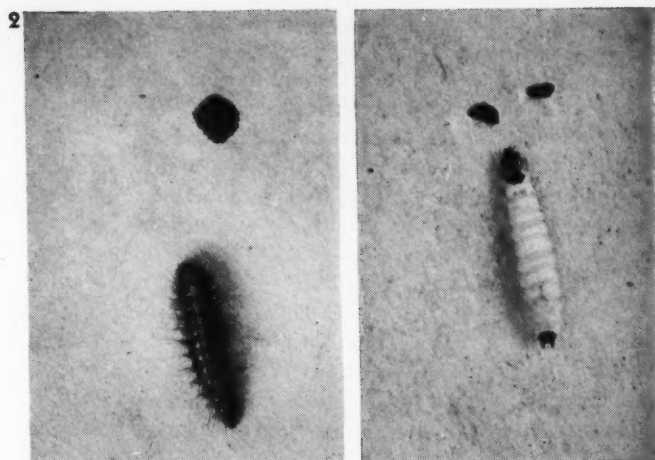
^a A, upper part of sheet and B, lower part of sheet, as it came from the press.

From these data it may be seen that the sheet as used in making the packages was by weight about one-third paper and two-thirds wax plus chemical. In order to make the bags of uniform size and shape they were formed about a wooden mold and all laps were sealed tightly by pressing with a warm soldering iron. The bags were filled loosely with flour and the upper ends were closed and sealed with special care. Two bags treated with the same chemical were laid on the side at the bottom of a gallon battery jar together with a few grams of loose flour and ten large cadelle larvae were added. Such a setup constituted a "unit test" which was kept in a small ventilated room at 30 deg. C. and approximately 60% relative humidity. The jars were shielded from strong light and were examined at intervals of a few days to note toxic effects and the time of first penetration of a bag.

Until recently all tests were made on prepared packages of various sizes but a method is now being developed for direct testing of films without the necessity of making them into packages. At present pint Mason jars with Kerr type lids are being utilized in these tests. A disk of the film to be tested, with or without a fold, is placed over the mouth of the jar. A ring made from one of the self-sealing lids is placed over the film thus exposing an "arena" 1.75 in. in diameter. A self-sealing lid is inverted over the above and the cap screwed down tightly giving the "arena" a depth of 0.19 in. Three cadelle larvae in the ultimate or penultimate instar are placed in the "arena." Penetrations are readily observed as the larvae drop down into the empty jar. This type of testing unit is quickly made and may be used effectively in experiments on the effect of various foods on penetration, the comparisons of penetrating power of various insects, and similar studies.

A similar method was used in the study of repellents. In this case the larvae were allowed to move away from the treated area. A sheet of paper towelling treated with wax only, and one treated with wax plus the desired chemical were fastened together with an interlocking lap sealed carefully and reinforced with fine wire staples. A half-inch fold was made in this composite sheet at right angles to the lap and in this folded condition the sheet was held on the lower end of a bottomless can (4 in. wide by 3 in. high) while the top was carefully forced part way on over the paper. Hence an "arena" of the same nature as that used by Wigglesworth (1941) in his work on the sensory reactions of the human louse was formed, half treated with the desired chemical and half free of it. The fold was not essential but it gave the insects a preferred place to penetrate the paper and hence shortened the time needed for a test. Five large cadelle larvae were placed in each of the cans which were kept in the room previously mentioned. Reactions of the larvae, e.g., avoidance of the treated area, toxicity and penetration of the paper were noted at daily intervals without disturbing them.

Materials tested: The following is a list of the materials



2—Showing insect penetration in metal foil packages containing dehydrated filet of sole. Photo on right is the cadelle larva; left, larva of the hide beetle.

which have been used in these tests up to the present time:

1. Super calendered unbleached sulphite.
2. Laminated amber diaphane.
3. Kraft plus 3% *Dowicide* (a chlorinated phenol derivative).
4. Double waxed parchment paper.
5. *du Pont Cellophane* 600.
6. *du Pont Cellophane* M.S.T. 300.
7. *Sylvania Cellophane* 300 triplex.
8. *Thermophane* A (a M.S.T. cellophane, moistureproof, heat sealing, transparent type of packaging material laminated to a sulphite paper).
- 9.¹ *Reynolds Metal Bag* (type A 10) covering *Standard 17 DF Solid Fibre Case*. Composition of bag as follows: dense kraft, asphaltic compound, solid sheet alloyed lead, moistureproof adhesive, cellophane, special heat-sealing coating.
- 10.¹ *Bemis bag* covering *Standard 17 DF Solid Fibre Case*. Composition of bag as follows: outer wall, 0.001 in. leadfoil laminated each side with 15 lbs. asphalt to 30 lbs. dense kraft; center wall, 50 lbs. dense kraft waxed to 100 lbs.; inner wall, 40 lbs. dense kraft; closure, taped, sewed and wax dipped.
- 11.¹ A fibre case double dipped in a thermoplastic wax (J-ration). First dip very hot for penetration. Second dip cool to wax outside and seal gaps.
- 12.¹ *Bates Multi-wall* paper bag (5 and 7 ply asphalt laminated bags).
13. Paper towelling treated with wax.
14. Abrasive paper, *Armour's No. 320A Crystolon*.

All of the above materials were penetrated by one or more of the insects tested. In many of the tests the packages were penetrated with ease and usually within a relatively short period of time. In our tests, the thermoplastic product (No. 11) shows the most promise of being insectproof.

With some of the insect species the presence of whole wheat flour on the floor of the test chamber appeared to make conditions more favorable for penetration. Evidence was also obtained which suggested that the contents of the package may influence insect penetration.

Several of the package materials would be more resistant to

¹ These materials were tested as commercial packages weighing 12½ or 25 pounds.

insect attack if it were not that in making them into containers, creases, folds and roughened areas are formed. For some species, at least, these disturbed areas are favored points for penetration probably because they provide better footing and leverage as well as traction for the mandibles.

A great variation was observed in the ability of stored product insects to penetrate packaging materials. As would be expected those that have boring propensities are the best penetrators. Thus the cadelle larva, *Tenebroides mauritanicus*, was the most efficient of the insects tested in penetrating packages. The lesser grain borer adult, *Rhyzopertha dominica*, proved to be rather effective and even the granary weevil adult *Sitophilus granarius*, demonstrated an ability to penetrate numerous package materials. The flour beetles, *Tribolium* spp. and *Aphanotus destructor*, adults and larvae, and the moths, *Ephestia* spp. and *Plodia interpunctella*, larvae, for the most part appeared to be poor penetrators and we have not yet been able to demonstrate that the saw-toothed grain *Oryzaephilus surinamensis* is able to penetrate packages (cf. the contrary results of Back & Cotton, 1926a). Likewise, although the drug store beetle, *Stegobium paniceum*, adult, has distinct boring ability, it did not appear to be a good penetrator in any of our tests. Table I summarizes the results obtained from trials with seven different packaging materials and nine different insects. In this series of tests the cadelle larva penetrated all the packaging materials regardless of whether they contained white flour or dehydrated potatoes. The granary weevil adult seems to be nearly as efficient. It penetrated all of the package materials but in some cases it did not gain entry into the packages which contained dehydrated potatoes while in others it failed to penetrate the packages that contained white flour. The lesser grain borer adult and the broadhorn flour beetle adults and larvae are in the third position both having penetrated four of the materials. The lesser grain borer adult penetrated only packages that contained white flour. Of the remaining insects the saw-toothed grain beetle adult is the only one that failed to penetrate any of the offered materials.

Only the cadelle larvae, the lesser grain borer adult and the saw-toothed grain beetle adult were used in tests with the material known as *Thermophane* A. In limited tests of these insects the cadelle and the lesser grain borer were able to

penetrate the materials. This packaging material has shown some promise but further tests are necessary.

Many different trials were made with Reynolds Metals or similar types of kraft-asphalt-leadfoil laminated bags. This material offered little resistance to the cadelle larva. Many penetrations were made within a two-week period. The cadelle entered most freely through areas that had been roughened in making bags or wrappers although it would occasionally penetrate a smooth surface (Fig. 1).

In one series of tests Reynolds Metals packages containing dehydrated file of sole were exposed to several kinds of insects. Of these the only two which were able to penetrate the packages were larvae of the cadelle and of the hide beetle, *Dermestes vulpinus* (Fig. 2).

In other tests with Reynolds Metals containers several different species of insects were utilized together. In most cases, at least one of these was able to penetrate the package. It was not possible, of course, to determine just which species made the penetrations and at this time we can state only that there are other species besides the cadelle and *Dermestes* that can penetrate this material.

A considerable amount of work was done with Bemis bags. The cadelle had no difficulty in penetrating this material. Other species of insects were used together and at least one of these was able to penetrate this package. However, if it were not for the fact that the cadelle penetrates this material with ease it would be one of the most promising thus far tested.

The thickness of the packaging material is undoubtedly an important matter. Thus paper towelling, either plain or waxed, is penetrated by cadelle larvae in two to five days, whereas they require several weeks in case of the heavy materials. For instance bags made of muslin heavily impregnated with wax were just penetrated after six weeks. The granary weevil adults can penetrate nearly all the thin preparations tested but none of the heavy ones. This situation probably prevails with all the flour beetles and moths which do not have strongly developed boring habits. Of course, in the presence of large populations damage may result even from such relatively innocuous insects.

The most satisfactory of the materials tested was a heavy cardboard container dipped in a thermoplastic material (No. 11). Of the 10 insects tested only the cadelle larva was able

TABLE I—RESULTS OF AN EXPERIMENT TO DETERMINE THE ABILITY OF VARIOUS INSECTS TO PENETRATE CERTAIN PACKAGING MATERIALS

PACKAGING MATERIALS	Super calendered unbleached sulphide		Laminated amber diaphane		Kraft 3 per cent Dovicide		Double waxed parchment		du Pont cellophane 600		du Pont cellophane M.S.T. 300		Sylvania cellophane 300 triplex	
PACKAGE CONTENTS	dehydrated flour potato		dehydrated flour potato		dehydrated flour potato		dehydrated flour potato		dehydrated flour potato		dehydrated flour potato		dehydrated flour potato	
SPECIES														
Saw toothed ^a grain beetle	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Confused ^b flour beetle	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Broadhorn ^b flour beetle	+	+	—	—	—	+	—	—	—	—	+	—	+	+
False black ^b flour beetle	—	—	+	—	—	—	—	—	—	—	—	—	—	—
Drugstore ^a beetle	+	+	—	?	—	—	—	+	—	—	—	—	—	—
Lesser grain ^a borer	+	—	+	—	—	—	+	—	—	—	+	—	—	—
Granary ^a weevil	+	—	+	—	+	—	+	—	—	+	—	+	—	+
Mediterranean ^b flour moth	+	—	—	—	—	—	—	—	—	—	+	—	—	+
Cadelle ^c	+	+	+	+	+	+	+	+	+	+	+	+	+	+

+ = penetrated — = not penetrated.
^a = adults; ^b = adults and larvae; ^c = larvae.

to penetrate it successfully and this in only one case and with considerable difficulty. Apparently the *Thermoplastic* dip along with the heavy cardboard offers resistance to insect attack. The greatest weakness of this type of package is the seal although it should be possible to improve this feature.

An interesting point is the resistance offered by *Armour's No. 320A Crystalon Abrasive* paper which, tested with cadelle larvae by the small bag method, was penetrated only after nine months of continuous exposure. At the present time no penetration has resulted in a continuing arena test which has already lasted six weeks. If tests with other insects are equally encouraging the possibility of using such materials will be worth serious consideration.

The addition of chemicals to the containers of foodstuffs for the purpose of protecting them from insects is a procedure which may be of value in addition to ordinary sanitary and packaging precautions. Such chemicals may act as poisons or as repellents, or both. If the invading insects are numerous a poison will be of little use since removal of a little of the container by each individual before it is killed will soon result in one or more holes through which other insects may enter. Consequently attention has been directed toward the discovery of repellents.

About 40 compounds have been tested in the wax-impregnated packages. For purposes of comparison the materials have been classified arbitrarily according to whether or not they prevent penetration for a 21-day period. Those so far studied which are effective for this period are:

Compounds	Concentration,		Time to first penetration, days
	%		
Benzyl disulfide	4	57	(6 larvae dead in 17 days)
Thialdine	4	43	(8 larvae dead in 8 days)
<i>p</i> -tert-Amyphenol	3	29	(9 larvae dead in 29 days)
Rotenone	3	27	(8 larvae dead in 12 days)
<i>o</i> -Dinitrobenzene	4	23	
<i>o</i> -Nitro diphenyl	3	22	(8 larvae dead in 8 days)
<i>m</i> -Dinitrobenzene	4	21	(8 larvae dead in 21 days)
3,5-Dinitrocresol	4	none	(10 larvae dead in 5 days)
	2	none	(10 larvae dead in 8 days)
	1	none	(10 larvae dead in 9 days)

The high mortality caused by most of the compounds above undoubtedly prolonged the time until the first penetration.

Among the substances giving slight or inappreciable protection the following may be mentioned. The figures in parentheses are concentrations in per cent and the materials are arranged according to general nature, e.g., all sulfur compounds are together but with no reference to order of efficiency:

Sulfur (3), dry lime-sulfur (3), thiourea (3), *o*-ethyl sym methallyl xanthate (3), diamino diphenyl sulfide (3), tetra-methyl thiuram disulfide (3), zinc dimethyl dithiocarbamate (4), lauryl thio-cyanate (3), *tert* butyl thio-cyanate (3), barium, lead, copper and cerium naphthenates (3); 1,2,3-trichloro propane (3), 1,1,1,2,3-pentachloropropane (3); diamyl amine (3), chloramine B (Na benzene sulfon chloramine) (3).

A few of the materials listed above have been tested by the arena method with half the surface treated and the other half untreated. Results to date show that the treated side is not penetrated when the following materials are used at 1% concentration in wax applied to paper towelling: 3,5-dinitro-*o*-cresol, 2-chloro, 6-phenyl phenol and 2,6-dimethyl naphthalene.

Summary

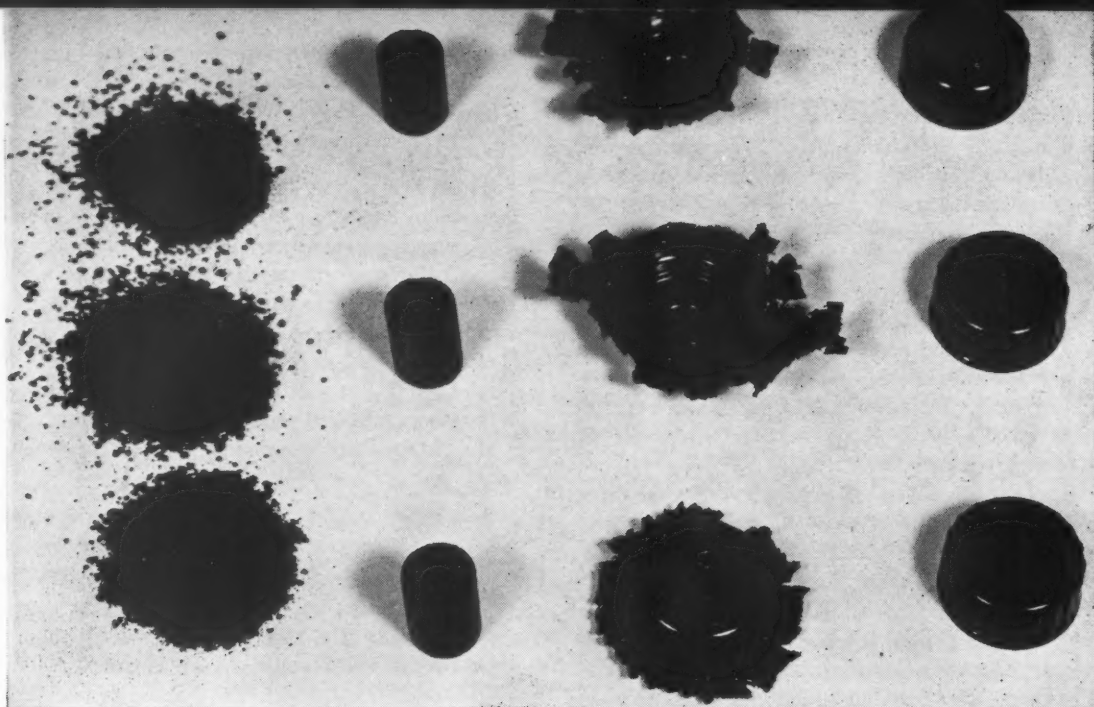
In order to provide insects for testing the resistance of packaging materials to the attack of stored products pests colonies of 32 species of these insects have been established. The general methods of rearing are discussed. Tests of resistance to penetration are carried on according to three techniques: (a) exposure of small packages or flat sheets of various packaging materials to one or several species, (b) similar exposure of commercial packages, (c) exposure of small bags or flat sheets of paper towelling impregnated with wax plus any desired chemical to test possible repellent effect.

On the basis of preliminary work it may be tentatively concluded:

1. With some insects penetration of package materials permeable to odors is apparently favored by the presence of food.
2. Those insects with propensity for boring are apparently the best penetrators of packaging materials.
3. At least one stage of each of the common stored food pests, except the saw-toothed grain beetle, was able to penetrate some of the materials tested.
4. None of the commercially used metal-substitute packaging materials tested is strictly insectproof. An abrasive paper is still under test.
5. The most promising type of material thus far tested was a heavy cardboard carton double-dipped in a thermoplastic material.
6. Among the more promising transparent cellulose materials are such products as *Thermophane* A and *Cellophane* 600. However, these materials are only relatively more resistant to penetration than most lightweight materials tested.
7. Laminated kraft - asphalt - leadfoil - cellophane bags showed little resistance to insect penetration.
8. Among the multiwall bags the Bemis bag was the most promising. However, it was readily penetrated by the cadelle.
9. Manufacturing techniques are needed which will produce uniform containers without roughened spots, creases, folds and similar areas where insects penetrate most easily.
10. Repellents offer a possible solution to the problem of keeping insects out of packaged food. Toxicity is shown by many compounds, especially phenol derivatives and the effects due to repellency are thereby obscured.

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1

1—In the molding of caps from stripping urea-formaldehyde molding compounds, the plastic (left) is compressed into pills (left center). After preformed caps with flash adhering to their edges (right center) are tumble finished, they are ready for shipment (right).

Stripping urea

by W. H. MacHale*

The word "stripping" needs little explanation to members of the molding industry, but for packaging men less familiar with the vernacular of the plastics trade, we shall attempt a definition. A stripping molding compound is one which, after molding, retains for a limited period of time sufficient elasticity to permit its ejection over substantial undercuts. A case in point is the ejection of threaded bottle caps from threaded force plugs without the necessity of an unscrewing operation.

This type urea molding material has already played an important role in wartime packaging and its development has been expedited by wartime scarcities of other type molding materials such as the phenolics.

Until the outbreak of the war practically all thermosetting stripping materials were phenolic. Prior to that time some work had been done by the urea suppliers to meet the demand for colored materials from molders equipped with stripping equipment. Although this early work contributed to eventual success, it was not until 1942—just about the time a serious

shortage of phenolics occurred—that a successful stripping urea was produced which met the performance record of its predecessors, the phenolics.

Although this new urea has been used primarily for closures, it is possible to see other applications in the packaging industry based on the stripping principle. Small undercuts frequently facilitate the joining of two different type materials. For example small paper or cardboard boxes may be crimped into a recess or an undercut in the urea plastic to secure a more permanent or leakproof container. The beauty of urea pastel colors and the physical rigidity of the plastic can by this method form part of the package assembly without great increase in cost.

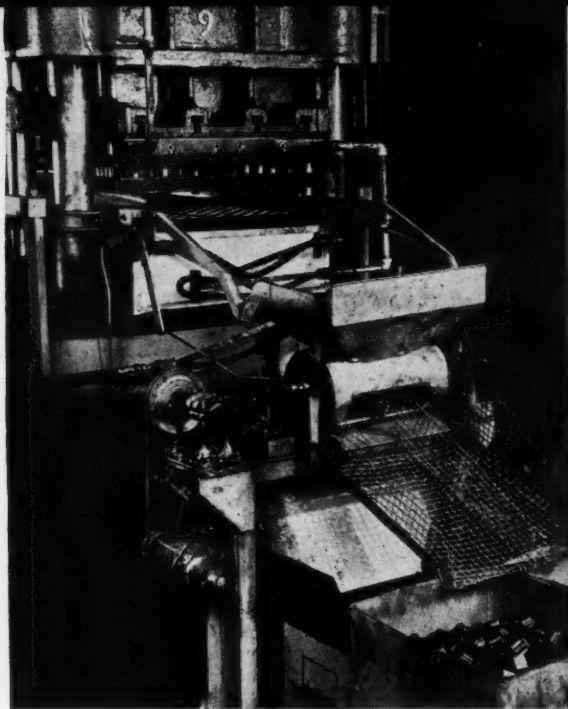
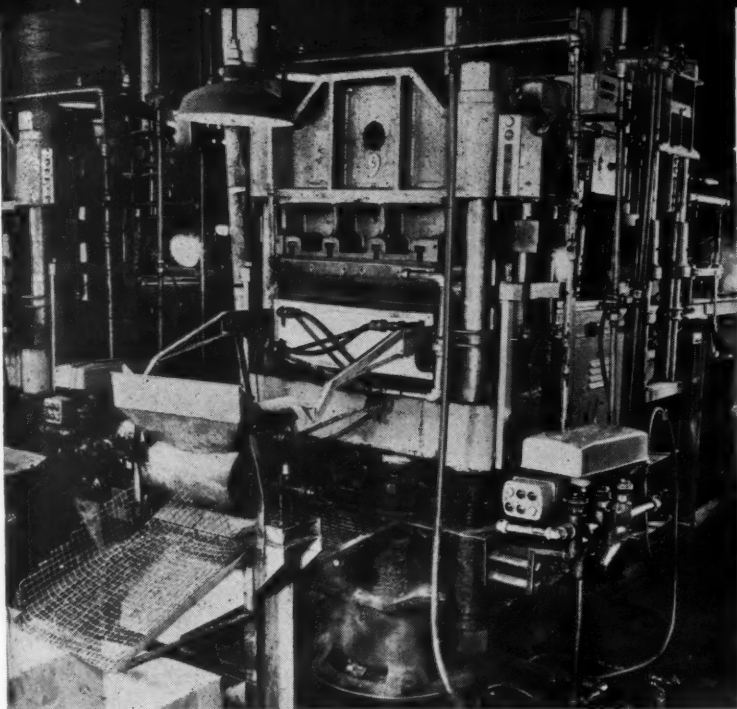
Another problem of the packagers, the use of two threads on molded parts, can be considerably eased. For example some plastic packages have been designed which have threaded sections at the base and also at the neck. In normal molding procedure, this calls for a rather complicated and expensive set-up. With a stripping urea, it would be possible to mold both threads and remove the piece by stripping from the cavity and unscrewing it from the force, or vice versa.

In the field of closures it has made available greater speed in the production of colored closures and better retention of liners through the use of an undercut in the base of the cap.

Development work on this new compound was largely confined to molding conditions existent at the Boonton Molding Co. and in the Anchor Hocking Glass Co. plant. In discussing the success of this material, George Scribner, president of Boonton Molding Co., stated that while his plant had for years made a fairly complete line of phenolic caps—ranging

To the users of molded plastic bottle caps, this development suggests that for the first time it will be possible to obtain pastel-shade urea caps manufactured with high-speed, automatic methods commonly used with phenolics. While it is difficult at this time to forecast price trends, it is axiomatic that costs decline in ratio to speed and ease of production.

* Plastics Division, American Cyanamid Co., New York.



2 PHOTOS, COURTESY BOONTON MOLDING CO.

3

2—In this automatic closure molding machine material is picked up as it comes from a barrel (right background) and preformed. After being loaded on loading fixture, preforms are dropped into cavities and molded. Stripped from threaded force plugs, molded caps are delivered to automatic tumbling barrel which takes off flash. Finished caps are then shunted into shipping cartons. 3—A close-up of the press and tumbling barrel. A load of caps has just been cleaned of flash and transferred to a shipping box.

from 8 mm. to 100 mm.—one problem was the lack of urea colors in the phenolic material. When efforts were made by the company to fill orders for caps in pastel colors using urea compounds, it found that rejects for cracks ran to at least 20%. Such was the situation when the outbreak of war completely cut off phenolic for liquor caps—the company's principal market for caps. According to Mr. Scribner, the Sayre automatic molding machine used in the plant held the cost of molding caps to such a low figure that the company could have continued producing the caps at a profit even with 20% rejects. Such a rejection percentage, however, is far from being good for the general morale of the shop.

Mr. Scribner states that today, as a result of the timely development of this stripping urea compound, his company can out-produce phenolic with urea. The complete molding cycle at this plant is 45 sec. to make 96 pieces of the 28 mm. caps or 60 pieces of the 38 mm. On this basis 18 sec. are allowed for open time and 27 sec. for each preform and preheat at 260° F. and mold at 320° F. These two latter periods are identical because they are simultaneous and in series. According to Mr. Scribner, the only difficulty that has arisen in the switch-over from phenolic to urea material rests on the fact that a bit more pressure is needed. He emphasized that while the company can compensate on phenolic by raising the temperature, it cannot do this on the urea. At first the plant experienced some trouble on tumbling urea because the flash was tougher. However, this condition was corrected by an

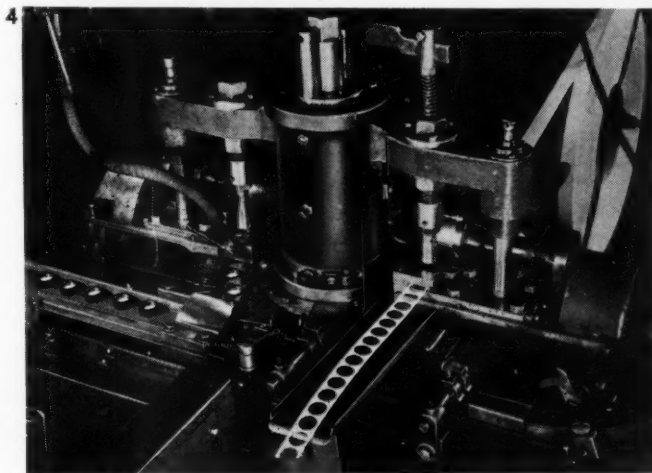
adjustment to the tumbling mechanism. Mr. Scribner stated that cap rejects are about 2% overall—very few from cracks. Thus far the company has only operated on brown. The standard material costing 27½ cents, has been used at the plant in preference to the newer material which has less resin content and sells for 22 cents.

Properties of urea stripping materials

Stripping urea meets the following five requirements for a closure material:

1. Extra flexibility for easy stripping—flexural strength 13% higher than regular urea-formaldehyde materials.
2. Fast cure for high-production rates.
3. Improved torque strength—from 25 to 90% stronger than regular urea-formaldehyde compounds, depending on the test methods used.
4. Low shrinkage—on the (Continued on page 146)

PHOTO, COURTESY ANCHOR HOOKING GLASS CORP.



4—In this automatic lining machine a ribbon of lining material is mounted on a spindle. Ribbon passes under automatic die wheel that punches out round liners and forces them inside caps which are delivered to rotating star wheel from a moving belt. A hopper automatically places each cap in an upright position on belt. Star wheel assures the correct spacing between the caps.

Conference of the Institute of Food Technologists

The vital role played by wartime packaging in making healthful food products conveniently available to American civilians and fighting men, as well as to our Allies in distant parts of the world, made packaging one of the leading topics of discussion at the fifth annual conference of the Institute of Food Technologists, held at the Edgewater Beach Hotel, Chicago, May 28 to 31.

Several of the papers presented at the conference dealt directly with packaging, while others, principally concerned with problems of food technology, contained significant references to the subject. Following are digests of some of the papers bearing on packaging:

Recent Developments in Packaging and Storing of Dehydrated Foods: WILLIAM NEUMAN, F. P. VAN WAZER and ROGER WILSON, *Continental Can Co. Research Laboratories, Chicago, Ill.*

How various packaging techniques influence the storage possibilities of a number of dehydrated foods was brought out by the authors. Emphasizing the fact that dehydrated foods must be considered perishable products, this report indicated that elevated temperatures are one of the most serious factors limiting their period of storage.

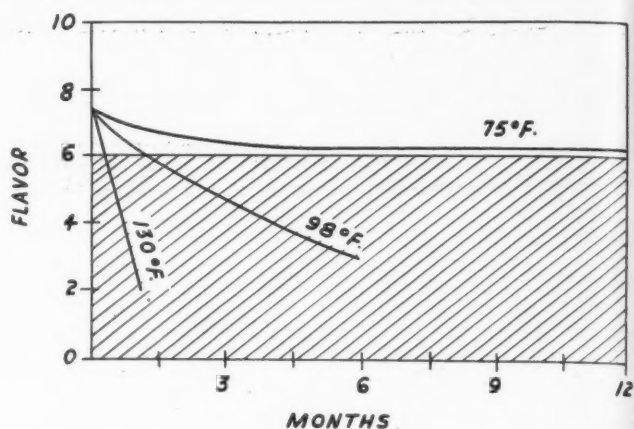
Food products used in the Continental Can Co. tests included apple nuggets, cabbage, carrots, cranberries, hominy, onions, rutabagas, sweet potatoes, tomato flakes, tomato juice cocktail, beets and white potatoes. The tests were carried out under commercially reproducible but controlled laboratory conditions, the dehydrated products being packed in four different ways, as follows:

1. In cans hermetically sealed in air.
2. In cans hermetically sealed in nitrogen.
3. In cans hermetically sealed in carbon dioxide.
4. In "the type of substitute paper containers which, at the time these studies were begun, were specified for some dehydrated foods by the government agencies."

In making the experimental packs, the following conditions were met:

1. All samples were taken from regular commercial lots at the dehydrating plants and were representative products as purchased by the Army and Lend-Lease.
2. A complete history of the product was obtained wherever possible, including the variety, general growing conditions, blanching time, dehydrating temperatures, etc.
3. All products were packaged as quickly as possible after dehydration.
4. The experimental packages were sealed in accordance with good commercial packaging procedure.
5. The paper containers were supplied, filled and closed under the supervision of one of the larger suppliers of such packages.

After packaging, the samples were stored under various conditions and examined periodically. The storage conditions and examinations were designed to develop both practical and theoretical information. To obtain practical information, the samples were stored at prevailing room temperature and at 98 deg. F. and examined for flavor, color and vitamin content. In order to obtain academic information, samples were also stored at 130 deg. F. and examined for composition of the gas in the cans, pH of the cooking liquors,



1—The effects of temperature on the flavor of cabbage

moisture changes on storage and changes in their reconstitution characteristics.

The factor of flavor was determined by taste tests by a group of five persons. A flavor rating of 10 was chosen to designate an absolutely perfect product, with a rating of 6 representing a product which was barely commercially passable. None of the tests disclosed any difference between packing in nitrogen and in carbon dioxide—a matter which was considered of interest by the research men since the latter does impart flavor to other products.

Gas packing was chosen for the experimental work in preference to vacuum packing because the amount of oxygen remaining in the container is, in general, less in commercial gas packing operations than in commercial vacuum packing operations and because the size of the container which can be vacuum packed without permanent distortion is definitely limited. Most dehydrated foods, it was pointed out, are packaged in large size containers on government contracts. Oxygen content of the containers packed for the laboratory studies was about 1%, corresponding closely to the oxygen content normally obtained in efficient commercial operations.

All the products tested were at the outset attractive, palatable foods, but they showed wide variations as the tests progressed, with some holding up better under storage conditions than others. These variations in storage life are indicated in Table I herewith. The Continental Can Co. research confirmed the fact that dehydrated fruits and vegetables, as we know them today, are definitely perishable products, and that their life is materially shortened by elevated temperatures. The influence of temperature was delayed in some cases, however, by the method of packaging employed.

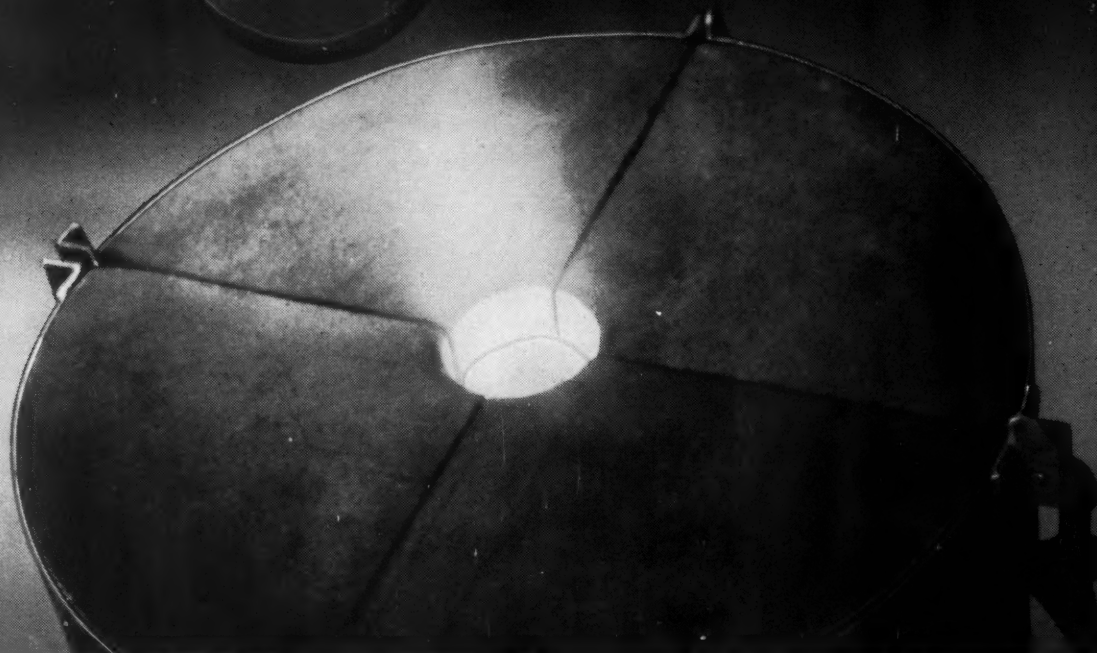
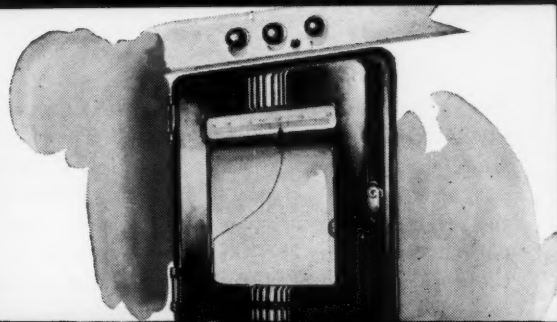
During storage, all of the products lost some of their ability to rehydrate; this loss was definitely accelerated at the higher storage temperatures. "Incidentally," the report stated, "we were surprised to find that even freshly dehydrated carrots would not reconstitute to more than 50% of their theoretical reconstituted weight." The type of packaging did not seem to affect the degree of reconstitution, storage time and temperature being the primary factors influencing this property of the dehydrated products.

A series of charts* exhibited by the authors graphically

* See Fig. 1.

GLASS FURNACE WITH A "SEEING EYE"

Research enlists almost magic controls
in its tireless search for better glass



FOR centuries, glassmakers took the temperature of their furnaces "by eye." They had to gauge it as accurately as possible just from a look into the furnace, because no known thermometer could measure the intense heat—often more than 2600° F.

Today, in Armstrong's experimental glass furnaces, temperatures are still taken "by eye." But it's a different kind of eye. It's a mechanical eye, poised high above and to one side of the furnace. A lens in this eye is focused—through the center opening in the furnace—onto the glass in one of the crucibles being heated. The changing color of the melting ingredients tells this mechanical "seeing eye"

the temperature of the glass, just as it used to tell the old-time glassmaker. Only, of course, with scientific precision.

Besides measuring temperatures precisely, today's "seeing eye" records them. It's connected electrically to a recording chart, which inks-in a permanent record of each furnace "run."

The use of modern instruments like these gives Armstrong's engineers, physicists, and chemists a high degree of control over experimental conditions in the glass labo-

ratory. Such instruments, plus long years of technical training and experience, are part of the secret of the success of Armstrong's research workers in making and keeping Armstrong's glass top quality.

Other sidelights on the equipment and experience that are required to make fine glass are interestingly presented in Armstrong's new booklet, "Men and Glass." For your free copy, write Armstrong Cork Co., Glass and Closure Division, 5907 Prince St., Lancaster, Pa.



ARMSTRONG'S GLASS



and ARMSTRONG'S
CLOSURES



traced the effects of the three test temperatures over graduated periods of up to a year on the flavor, color, vitamin content and percentage of reconstitution of the various products tested. In some cases, packing in gas helped to preserve the original red or orange color of the product. Nitrogen-packed cranberries showed better retention of flavor than those sealed in air, but this differential was less marked in the case of cabbage and very small in the case of beets.

Only the predominating vitamins in each product, including carotene, ascorbic acid, thiamine and riboflavin, were considered in studying the effect of storage on the vitamin content of the dehydrated foods. Temperature, it was indicated, had no effect on riboflavin, but a very definite effect upon retention of the other three. An inert atmosphere was shown to promote retention of ascorbic acid and carotene.

The deterioration of all the dehydrated products at higher temperatures was accompanied by a corresponding evolution of carbon dioxide. The amount of carbon dioxide evolved at 130 deg. F. was, in some instances, sufficient to build up a pressure in the cans of 18 to 20 lbs. per sq. in.

"The effect of packaging on keeping quality is important," declared the report. "Our results indicate that gas packing, in general, is helpful in retaining the original good quality of these products. Some products are benefited more by packaging in an inert atmosphere than others, but it was surprising to find that the flavor of nearly all of them could be preserved better by the absence of oxygen."

With reference to the advisability of compressing dehydrated foods, the report stated: "Actually relatively few commercial installations of compressing equipment have been made. Furthermore, the damage often done to the product by compressing it, the easing of the shipping situation and the inherent expense of compressing equipment all militate against its extended use at present. From a merchandising standpoint, compressed dehydrated foods do offer some post-war possibilities."

Although several procedures for properly gas packing dehydrated foods have been suggested, said the report, the most practical one from the production standpoint is the vacuumizing and gassing method. By this method, it is entirely practical, at commercial operating speeds, to secure oxygen contents of 2% and frequently lower than 1%.

"The fundamental reason for inferior gas packing operations on dehydrated foods," stated the authors, "was originally lack of specifications which would force the producers to gas pack properly. More recently, the requirements

have been stiffened and the equipment for gas packing correspondingly improved. . . .

"The packaging of dehydrated foods for our armed forces and allies was acknowledged to be a difficult one at the outset," said the report. "This was particularly true since a water-tight and, in many cases, a hermetically sealed container was required to package perishable food. Everyone agreed that a metal container was needed to withstand the abuse of shipment overseas.

"However, the use of paper containers should by no means be construed as an error in judgment on the part of those responsible for packaging dehydrated foods. Rather, it was a necessity of war due to the imperative need for steel and tin for other uses. Evidence of this lies in the fact that as the steel and tin situation has eased, the use of metal containers has correspondingly increased."

Special Food Problems of the Navy—Food Technology Problems in Combat Areas: *Participants:* REAR ADMIRAL E. G. MORSELL, *District Supply Officer, Ninth Naval District Supply Corps, Great Lakes, Illinois.* (European Area): LT. COL. D. B. DILL, *Office of Quartermaster General, Washington, D. C.* (Southwest Pacific Area): CAPT. W. W. BAILEY, *Quartermaster Substinence Research and Development Laboratories, Chicago, Ill.*

In his paper Admiral Morsell referred to the Navy's increased dependence on processed foods—dehydrated, canned, dried, etc.—which he said enabled this arm of the service to carry increased numbers of men over longer distances. He declared that in its food handling operations the Navy is constantly seeking methods of cutting down space and weight, minimizing the effects of temperature variations on foods and extending their keeping times.

Col. Dill exhibited colored slides of the many packaged food items contained in the U. S. Army's popular "10-in-1" ration and of the V-type sleeve container which has been proving its value as the outer package for this ration.

More details on the performance of food packages on the actual fighting fronts were provided by Capt. Bailey. His report was based on observations made during a recent 36,000-mile tour during which he visited eight of our island bases in the Southwest Pacific area.

On account of the great distances involved in the Pacific war theater, declared Capt. Bailey, it was necessary to take for granted a period of nine months between the time a food product leaves its processing plant and the time of its actual consumption by U. S. troops. This time interval underscores the necessity of having foods leave this country in perfect condition.

Capt. Bailey expressed the wish that more of the food technologists might view the actual conditions under which foods are stored and used in the field. In the supply dumps, most of the foods are stacked in the open, dispersed for protection against enemy bombing. He called upon the technologists to work toward increased storage life of food items, since some of them may be required to withstand exposed storage for as long as a year. Had packing and packaging techniques at the beginning of the war been equal to those in use at present, he said, few complaints of failures would have been heard.

Notwithstanding the packaging advancements made, many supplies are still being packed too heavily for their containers, and for the material from which the cases were constructed. In the early stages of the war, this practice resulted in thousands of loose cans scattered around ports and supply dumps. Men charged (Continued on page 142)

TABLE I—STORAGE LIFE

Product	75 Deg. F.	98 Deg. F.
<i>Gas Pack</i>		
Apple nuggets	1 year plus	9 months
Cabbage	6 months	1 month
Carrots	1 year	2 months
Cranberries	1 year	6 months
Hominy	1 year plus	1 year plus
Onions	1 year	2 months
Rutabagas	1 year	6 months
Sweet potato	1 year plus	9 months
Tomato flakes	1 year	6 months
Tom. juice cocktail	1 year	2 months
<i>Air Pack</i>		
Beets	1 year plus	6 months
White potato	9 months	2 months

WHEN THE ACCENT'S ON "Eats"



The smart hostess knows that one way in which an ordinary buffet supper or luncheon can be turned into an outstanding success is by serving *Armour's Star Pigs Feet* . . . the appealing piquancy of which adds zestful interest to any meal.

The sturdy, dependable closures—which also enhance the package appeal of the jars in which these *Armour's Star Pigs Feet* are packed—are attractively lithographed Crown Lug Caps.

CROWN CORK & SEAL COMPANY

Closure Division

Baltimore-3, Md.

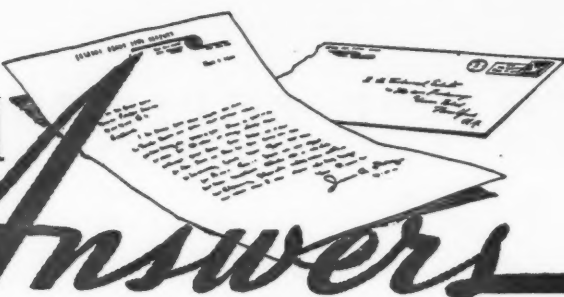
WORLD'S LARGEST MAKERS OF METAL CLOSURES

CROWN CLOSURES

Crown's Wartime Policy: To supply closures, containers and services for packaging foods, beverages, chemicals, etc., needed by civilians and the armed forces. To build an ever-increasing volume of vitally needed weapons of war for our fighting men.

QUESTIONS and

Answers



This consultation service on packaging subjects is at your command. Simply address your questions to Technical Editor, Modern Packaging, 122 East 42nd St., New York 17, N. Y. Your name or other identification will not appear with any published answer.

Moisture absorption of salt

QUESTION: Referring to the question on Page 102 of the February 1944 issue on the testing of salt packages, there is one point on which we would appreciate further information. You state "since salt does not harden when moisture is absorbed but after the moisture is gone above a certain level and the moisture leaves the salt. . ." Could you tell us the limit to which moisture can be absorbed and then dried out of the salt without causing the salt to harden?

ANSWER: The quantity of moisture which salt can pick up and not cake when the moisture is lost depends upon the type of salt, the kind and fineness of the crystals and the kind and quantity of the filler. Variables in this caking effect are due to degree of the purity of the salt, the process of manufacture (grainer pan, vacuum pan, etc.) the size and kind of salt particles, whether it is a coarse crystal or a fine flake or powdered salt, but the most important factor is the quantity and kind of filler used. However, it is rather surprising that in nearly all cases hardening can occur with less than 1% added moisture by weight. For example, a popular vacuum pan table salt with 1% magnesium carbonate filler will show caking on drying after gaining 0.6% moisture. A grainer pan dairy salt with no filler shows the same effect with 0.1% added moisture. A grainer pan table salt with 1% tricalcium phosphate filler shows this effect with 0.6% moisture. Fortunately the equilibrium humidity of salt is high, the equilibrium humidity being the relative humidity at which the product neither gains nor loses moisture. In the case of salt this value is in the neighborhood of 70% and no caking occurs in filled salts exposed to humidities up to this value. The degree of caking in unfilled salts becomes excessive only when this relative humidity is reached or exceeded. Apparently the caking of salt can occur after the moisture content has been raised to the point where the moisture begins to liquefy the surface of the salt. The critical value of this moisture level is of course much higher than in the case of the filled salts since the fillers have the property of absorbing excess moisture which otherwise would act on the surface of the crystals. However, when the moisture content exceeds this critical value, then the surface of the salt begins to go into solution. As long as this moisture condition is maintained, the salt does not cake but still shows some flowing tendencies because of the lubrication of this liquid or semi-liquid film on the surfaces of the crystals. Obviously salt in this condition is not free-flowing but neither can it be considered as hardened or caked. However when conditions are such that the salt begins to lose its moisture, the salt crystals are fused together at the points of surface con-

tact by the crystallization of the salt which was held in the surface solution.

Bags for hygroscopic product

QUESTION: Our product is a mixture of inorganic salts which are used as a supplementary plant food. Our present package consists of a two-ply kraft bag, the inner ply of which is a dry waxed kraft sheet. This bag has a pasted bottom back seam and is closed with metal clips. We noticed that over extended periods of time this product tends to harden and cake slightly which renders its use more difficult. How can we better protect this product without changing our package too radically?

ANSWER: Your product is apparently slightly hygroscopic and on long standing, especially in summer weather, picks up sufficient moisture to cause some caking. The dry waxed kraft sheet which you are using for the inner ply of this bag does not have any effective resistance to the transmission of water vapor. If you attempt to use a more heavily waxed sheet to obtain additional moistureproofness, you will have difficulty in obtaining strong seals. In this case an inner ply of asphalt laminated kraft will probably supply sufficient moisture-vapor resistance and still seal well on the bag making equipment. Such a sheet will add considerable strength to your bag and, although it will increase your cost somewhat, it should protect your product adequately. Such a lining ply should be a so-called 30-30-30 type which is two 30 lbs. krafts laminated with 30 lbs. asphalt. This sheet is made by a large number of companies and you will have no difficulty in obtaining samples of such a structure.

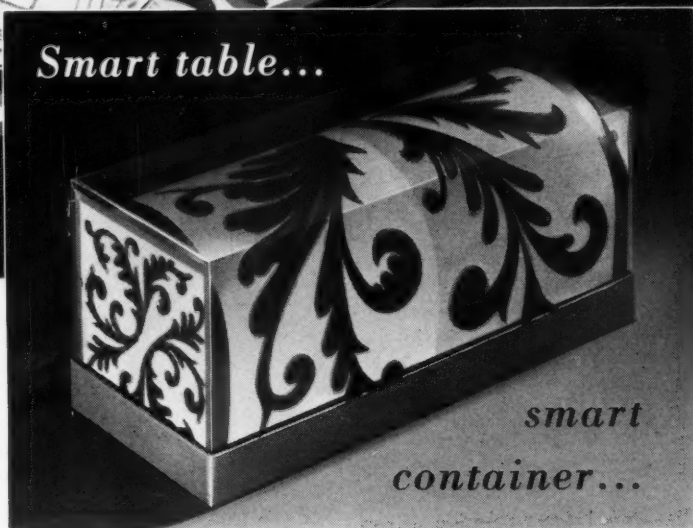
News filled board for frozen food

QUESTION: We have been using a 100% virgin pulp board for our frozen food cartons. Due to the difficulty of obtaining sufficient quantities of this type of board, we are interested in knowing if it is possible to use a news filled board for this purpose.

ANSWER: Up to some years ago the frozen food industry used nothing but the 100% virgin cut board for their cartons, etc. However many companies have found as a result of laboratory work and experience that this quality of board is not necessary for frozen food use. You will find today many cartons which contain news filled centers with surfaces of bleached or unbleached virgin pulp. Commercial practice is to obtain a good quality of news for the center plies and to make adjustments in the calendering to obtain a board in every respect as effective and workable as the 100% virgin pulp boards.



Smart table...



*smart
container...*

and they both
owe a lot to

EASTMAN ACETATE SHEET

attracts • protects • sells

THE prewar mats which add so much to the charm of this table setting are of Eastman Acetate Sheet. They're gay, smart—and very practical—not only because moisture can't get through to mar the table top; but because they're economically "laundered" by simply wiping with a moist cloth.

The transparent container . . . also of Eastman Acetate Sheet . . . displays the merchandise perfectly while providing complete protection; it is doubly smart because it can later be used on the dressing table as a receptacle for handkerchiefs, gloves, cleansing tissues.

Right now, only essential wartime needs for Eastman Acetate Sheet can be filled. But . . . when it is again available for civilian use, you'll

want to include Eastman Acetate Sheet in your packaging plans. Three standard types are regularly available in sheets and rolls . . . Clear Transparent, Matte Translucent, Colored Translucent.

Easily worked, Eastman Acetate Sheet can be scored, folded, pleated, molded, or drawn. It can be sewed, crimped, or stapled . . . and it takes printing inks without wrinkling. For more detailed information, write to the Chemical Sales Division, Eastman Kodak Company, Rochester 4, N. Y.

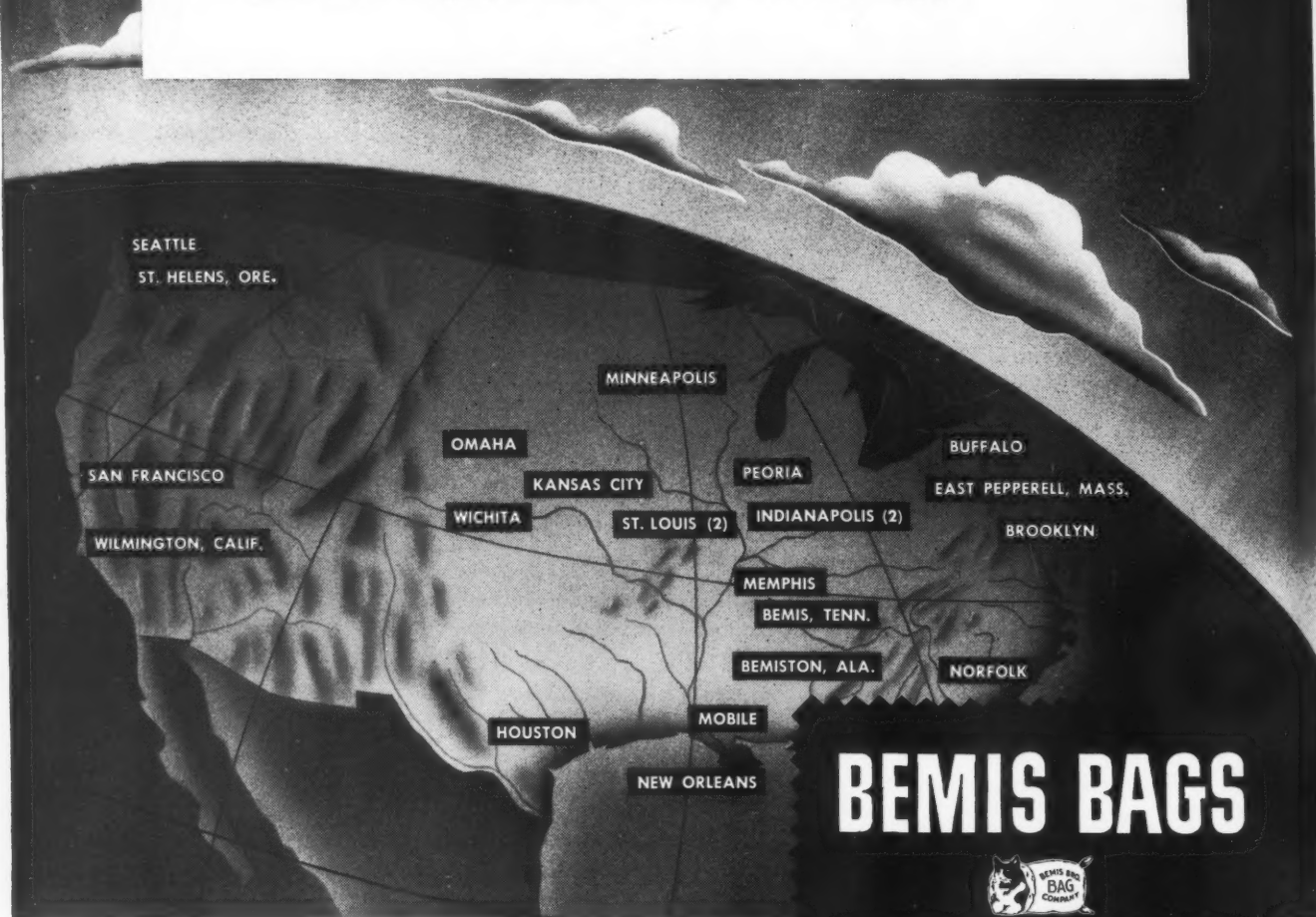
Yours to Use . . . The Kodak Packaging Laboratory at the Kodak Park Works is at your disposal for practice in fabricating Eastman Acetate Sheet. Why not use this workshop and learn how readily Eastman Acetate Sheet can be adapted to your own requirements?

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WARTIME restrictions and the tremendous movements of the many essential products that are shipped in bags naturally create a tight supply situation. It's a difficult problem to furnish all of the bags that are needed... just when they are needed.

That's why it pays to do business with a company like Bemis.

Twenty-three factories across the country mean a lot of productive capacity... and they also mean convenience and the best possible service under any prevailing conditions. In short, we sincerely believe that today, as in normal times, you'll find Bemis Bro. Bag Co. your most versatile, most reliable source of supply.



BEMIS BAGS



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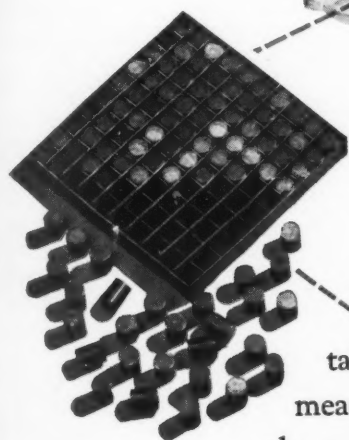
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Bemis makes Paper (both single and Multi-wall), Waterproof, Deltaseal, Cotton and Burlap Bags.



On With the War -to Victory



Your sons and ours . . . on dangerous air missions, with Navy Task Forces, in lonely fox holes . . . daily risk life and limb. Can our devotion to the great task of winning the war be so much less than their last full measure? They give ALL . . . depending on us only to keep the supply lines unbroken.

Inspired by their example we, as a leading converter of Cellophane and Glassine, are dedicating our efforts and output first and foremost to the war. Food, munitions and supplies **MUST** reach our fighting fronts beyond the seven seas, free of contamination, dust, moisture, rust or corrosion in fast-sealed, waterproof cellophane bags and wraps.

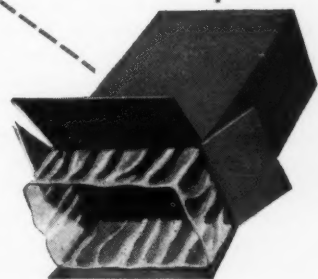
Our waterproof TITE-SEAL Bags have been recommended by Forest Products Laboratory for packaging military parts, Grade A, type III; Methods 1 and A1. NOW we offer Method II Material.

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WASHINGTON REVIEW

by R. L. Van Boskirk

● **Re-Use Slackers**—Strange as it may seem to readers of this magazine, there are still thousands of box users in this country who have done little or nothing to save shipping containers. They will no doubt continue to do nothing until there are no more boxes forthcoming. That particular phase should have reached most of the low-essentiality users by the end of this month.

How to reach the high-essentiality users is something different because some of them seem to think they are beyond approach. However, a recent story which came from a prime contractor with an AA-1 priority who was within four days of exhausting his supply illustrates a moral for all users. A manufacturer of engines receives an engine part in cylindrical fibre containers of the highest quality. That particular engine part is supplied to the manufacturer by one company exclusively. It would seem that the containers could be shipped back to the part maker and be re-used. They are not being returned and the AA-1 priority has not guaranteed the boxes when needed. Our informant says the old boxes are not even salvaged as waste paper—they are burned.

Emphasis on re-use is turning steadily toward salvage of more kraft through grocery stores. Chain stores are going to be urged to stop the practice of making bags so easily available to their customers. Housewives will be encouraged to bring their own paper bags when shopping. Use of oversize sacks for small items will be discouraged. Sacks may be refused for pre-packaged items such as cereals, eggs, etc., that can be carried without one. Collection of kraft waste paper in the home will be publicized more emphatically.

Users of containers are urged to get in touch with nearby Army and Navy posts where large quantities of used containers are sold to the highest bidder. These posts have been a fruitful source of boxes for wise buyers.

Attention is also called to a statement by William H. Davis of the War Labor Board that his organization will *not* interfere with incentive payments made for return of used cartons. Many firms had hesitated to pay their drivers extra money for this service because of fear that they would be violating wage laws.

OPA has made a change in the price order for used containers. One permits

payment of a price higher than "scrap price" for second-hand containers in a "set-up" condition. Previously they had been priced as scrap unless knocked-down. Many users buy them in their original "set-up" condition, but OPA originally seemed to feel that they must be knocked down before they could be classified as a second-hand container.

● **Cork in a Bottleneck**—Cork, like other materials pressed into double duty during wartime, has been faced with shortages due to shipping difficulties. The situation has been further complicated because of various political straws in the international winds. Imports previously received from North Africa, Portugal and Spain have not only dropped considerably but in the last quarter have virtually been frozen. In North Africa there is a substantial amount of cork which would ease the situation, but it cannot be imported from North Africa without proper negotiation with the French Government and negotiations of this type are never effectuated quickly.

At present, it is anticipated that the third quarter will show an improvement in imports from both Spain and Portugal in addition to shipments expected from Africa. This would be a considerable relief because not only were the demands for second quarter 20% higher in '44 than in '43, but incoming shipments have been reduced to one-third of what was received during the same quarter last year.

It is planned to encourage the use of composition cork scrap to help increase the production of cork liners for beverage crowns by prohibiting its use for non-essential items such as decorative and novelty products.

● **Shipping Containers**—It is difficult to conceive of any Government order touching more individual businesses than the revised L-317 (fibre shipping containers). In all the hubbub aroused over this amendment few persons seem to be aware that a house-moving was involved. L-317 was moved from the Paperboard Division into the Containers Division, for the reason that Containers is in a better position to see the over-all picture. Their job is to provide industry with receptacles in which to move goods and apportion them as evenly as possible. Paperboard's job is to

produce as many paper containers as possible. One is a distribution job and the other a production job.

Don't be surprised if other moves of this sort take place in line with the coordination policy mentioned in this column last May.

Even though the revised L-317 is far more restrictive, officials believe that it provides greater assurance of boxes to the lower-rated items.

However, the order has been going through a shake-down process since its original inception and the least essential items are being gradually curtailed. As a hypothetical case, say that both canned tomatoes and candy were classified as food. Many persons think it is more important to move tomatoes than candy and the red tape has been cleared away so that officials can move toward that end.

Users can help themselves live with the order by taking advantage of redesign to get more space in every container and by re-use of old cartons.

In addition to the changes in the list of restricted use, the order has been rewritten so that the limitation is on both acceptance of delivery and use. Formerly it was on use alone.

● **Restrictions Off Urea?**—It is probable that many of the restrictions on urea will be lifted in the near future. The effect on the packaging field is uncertain because all requests for urea used in adhesives, closures and containers, as well as in package dispensers, have been allowed practically in full for the last several months. Manpower is apparently the only limiting factor at present, and this will doubtless continue to be true as long as this country is on a full-time war production schedule.

● **Lumber Control Plan**—Manufacturers of wooden boxes seem confident that the forthcoming new lumber control order will ease their problems. There has been a wide disparity between production and known use of lumber. No one seems to know where the unknown quantity went unless it was sold directly to the consumer by small mills. Under the new order, it will still be impossible to control all of the small operators, but there will at least be more than formerly because the small mill output will be controlled if it passes



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ing & Bottling Machine. In these invisible qualities, just as much as in the visible qualities, lies the secret to lower cost per container.

But why is lower cost per container so important? Because essential products packaged on Pneumatic machines are to be found in practically every American home. Therefore, lowered packaging and bottling costs broaden the distribution of all these many important items—make them available at lower cost and in greater

abundance in more American homes.

The standard of packaging and bottling perfection made possible by Pneumatic Equipment is part and parcel of this country's unequaled standard of living. We welcome any questions you may have about packaging or bottling your product. PNEUMATIC SCALE CORPORATION LIMITED, 82 Newport Avenue, North Quincy 71, Mass. New York 6, San Francisco 11, Chicago 1, Los Angeles 13.

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through concentration and distribution yards. This will necessarily bring under control that portion of the small producer's production which he could not sell direct. It is believed that the new order will balance the supply situation so that all essential orders can be filled within a reasonable length of time and enough will remain to furnish a much better supply than for low-rated customers.

This new order was scheduled to go into effect at the beginning of the third quarter, but was held up because available lumber was concentrated in a few spots and therefore many manufacturers would have been handicapped. The order is expected to be out just as soon as the raw material can be evenly distributed around the country.

● **Beverage Cases**—Manufacture of beverage cases is supposed to be forbidden. Peacetime manufacturers of these cases are busy with other orders and wouldn't worry much about it except that newcomers have come into the field and apparently are purchasing lumber from small saw mills making beverage cases and offering them for sale. This situation disturbs old line manufacturers because their once lucrative customers can't seem to understand why their old suppliers can't make a beverage case but a new man comes into the scene and apparently does the job. Of course, the new man is violating the law but he is difficult to smoke out. It is hoped that the new control order will help to eliminate this situation.

● **Egg Cases**—It has been estimated that 30 million egg cases will be needed this year. The wooden box industry had counted on making only 10 million, the balance supposedly coming from fibre. But the outlook for these fibre containers is not bright. In the first place, 20 million fibre egg cases takes a big chunk out of fibreboard production that is sorely needed for shipping containers. Furthermore, there have been complaints that the cases were not of uniform size. As a result, there has been difficulty in stacking them in freight cars and breakage has resulted. At the present moment, efforts are being made to get more of them made of wood.

● **Military Boxes**—No appreciable change in wooden box orders is anticipated as a result of the invasion. The industry is already going full speed on full production and could not increase the output even if requested. Scarcely anyone anticipates any letdown in box production because the more soldiers there are and the more success they have, the greater will be their demand for supplies and, of course, there is the problem of supplying civilians in the invaded countries. Incidentally, Colonel Berlinger recently told members of the industry that wooden containers were now far more satisfactory than at the beginning of the war. Industry members feel that the improvement is because specifications

have been changed from the old $\frac{3}{16}$ shook so that it is now $\frac{5}{16}$ or more, depending upon the product to be packed.

● **Effect of Switch to Metal Containers for Ammunition**—It is difficult to reconcile statements of various officials who assert that the changeover from paper to metal ammunition containers will *not* make more paper available for other uses, but that on the other hand metal for steel containers and cans will be tighter than ever. An Army press release says no large saving in paper will be effected since containers for packaging rounds in greatest production will utilize an inner fibre carton. Inquiry among paper people reveals that the individual paper ammunition container required only a small amount of kraft, but the total use of kraft was tremendous because there were literally millions of containers manufactured. It is presumed that practically all the paper containers on hand will be used up during the switchover from paper to metal because it was never possible to build up a reserve.

Another reason why abandonment of the paper container program will have little effect on civilian paper needs is that ever-increasing quantities of material must be shipped overseas for both military and UNNRA purposes. There are also large quantities of paper going into ever-increasing manufacture of bomb bands. In addition, large quantities of container board and boxboard are going to England because that country's population has been greatly increased by American visitors of one type or another and the English have had almost no material from which to make boxes for several years.

The effect of the metal ammunition container program on cans and metal drums is negative only because it prevents an expansion program that had been widely hoped for in both categories. Facilities that might have been used for tinplate or sheet metal are not now available for civilian container purposes. An Army release says the ammunition container program will take 125,000 tons of steel during the first three months of production, which is a good sized figure in comparison to the quarterly allocation of 163,500 tons for steel drums alone. Furthermore, the tubing required by the Army for containers represents almost the entire heavy welding tube steel capacity of the country.

At the beginning of 1944 both metal can and drum officials in WPB believed that there would be a decided change for the better in the third and fourth quarter and they actually made plans to expand permitted uses, but those plans are now in limbo.

● **Steel Drums**—Despite the tightening steel situation, WPB amended the drum order, L-197, and added seven new commodities that may use steel instead of fibre. One reason was to save fibre. The principal purpose of the order, however,

was to make it more flexible and cut down paper work. It is no longer necessary to require a specific authorization, but a blanket certification must be filed with the drum manufacturer by the customer. The user now gets 95% of the tonnage of new drums used for specific classes of commodities during corresponding quarters of last year. However, his unused drum quota may be carried into the next quarter, and to relieve emergency needs, 25% of the next quarter's quota may be borrowed. There seemed to be considerable misunderstanding of this permitted flexibility.

Complaints from large drum users asserted that they didn't have time to make the changes and they didn't like that 95% quota in cases where their production showed big increases. Officials point out that the quota was deliberately set at 95% in order to build up a "kitty" to take care of such cases. They will now have that 5% of their total allocation of metal for adjusting hardship cases. Something like 25,000 tons a year will be available for that purpose. If that is not enough to take care of all emergencies than it is up to the Claimant Agency to go to the Requirements Committee and present its claim for more. Containers Division can only allocate the steel allotted to them.

Another complaint on the steel drum order was that it penalized the companies that had made the greatest re-use of old containers. WPB admits the justice of the charge, concedes that the more patriotic citizens frequently are unintentionally penalized to the benefit of the more greedy in wartime, but declares that it doesn't know how to adjust the situation.

● **Metal Cans**—Sadly disappointed in their hope of getting more metal for the third quarter, the Containers Division was forced to postpone production of cans for packing five different food items, motor oil, paint and polishes. The division had asked for 668,000 tons for the third quarter but received only 634,000. Even Mr. Wilson had supported the Steel Division for the first time in its attempts to increase production of tinplate. Among other complaints was one from the military agencies questioning the essentiality of additional tinplate for canning foods when chain grocery stores are offering canned goods in case lots.

● **Aluminum Cans**—It is possible that some relief may be obtained by channeling more glass into the tin can field. Another possibility is aluminum, especially for dry products. Manufacturers say, however, that the cost of aluminum containers would be high and that containers requiring soldered seams could not be made from the bright metal.

● **BRIEFLY**—Quota restrictions on burlap bags have been eliminated. . . . The textile bag order has been amended to prevent use of oversize bags for such things as pillow-case designs. . . . The (Continued on page 144)



WATER FIT TO DRINK...

Keeps men fit to fight!

Running water on a battlefield is usually water running down the side of a slit trench. And that's not exactly drinkable!

So wherever our Army advances, the Corps of Engineers goes along to provide a water supply safe for a thirsty man to drink. Right up to the very front go the engineers and their mobile water purification units... seeking out the best water to be had... and then making sure it is safely purified.

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U. S. patent digest

This digest includes each month the more important patents which are of interest to those who are concerned with packaging materials. Copies of patents are available from the U. S. Patent Office, Washington, at ten cents each in currency, money order or certified check; postage stamps are not accepted.

PACKAGE. O. H. Hultin (to Pneumatic Scale Corp., Ltd., Quincy, Mass.). U. S. 2,345,978, April 4. A package comprising a carton having side and end wall panels provided with extensions forming the top closing flaps.

COLLAPSIBLE CARTON. C. B. Bishop (to Container Corporation of America, Chicago, Ill.). U. S. 2,346,003, April 4. An improved carton of corrugated or solid fibre paperboard for protecting an article of upholstered furniture secured to a leg crate providing nailing strips around the outer edges thereof.

FILLING MACHINE. A. R. Thompson (to Food Machinery Corp., San Jose, Calif.). U. S. 2,346,056, April 4. A machine for filling open top containers with a viscous substance.

APPARATUS FOR SEALING CONTAINERS. H. E. Stover (to Anchor Hocking Glass Corp., Lancaster, Ohio). U. S. 2,346,118, April 4. Apparatus for sealing containers comprising a support for a container, a sealing member adapted to be moved to force a cap on the container, a fluid-operated unit for moving said sealing member.

CONTAINER. J. M. Hothersall (to American Can Co., New York, N. Y.). U. S. 2,346,684, April 18. A leak and moistureproof fibre container for liquids.

CONTAINER. J. M. Hothersall (to American Can Co., New York, N. Y.). U. S. 2,346,685, April 18. A sealed sanitary fibre container for liquids.

CONTAINER. D. E. Wobbe (to American Can Co., New York, N. Y.). U. S. 2,346,714, April 18. A sheet metal container having a soldered side seam, comprising a tubular body having a portion of its exterior surface on opposite sides of the seam and substantially equally spaced therefrom, coated with a heat-resistant and solder repellent metallic paint.

CARDBOARD BOX. A. T. Ruch (to Newark Paper Box Co., Newark, N. J.). U. S. 2,346,792, April 18. A package comprising a box having bottom and side walls and an open top bounded by the edges of said side walls, an article-position unit within said box with its sides abutting the respective said side walls and with its top side below said edges of said side walls

and exposed through said open top and flexible strips of material overlying and adhesively secured to the top surface of said unit.

CONTAINER. Z. Auerbach, New York, N. Y. U. S. 2,347,021, April 18. A container comprising an inner structure unit, two opposite sides of which are shorter in height than the two other sides, notches in the edges of said narrower sides, elastic bands in said notches running parallel to said wider sides of inner structure unit and embracing said elastic bands and within said inner structure unit, said unit conforming to the interior structure unit, whereby articles are held under tension of said elastic bands.

CARTON FOR ICE-CREAM CONES. W. S. Watts and G. J. Losson (to Eskimo Pie Corp., Bloomfield, N. J.). U. S. 2,347,161, April 18. A carton for ice-cream cones consisting of a wedge-shaped unitary piece of cardboard separated longitudinally by scoring into at least four wedged-shaped side wall sections one of said side wall sections carrying at its top a hinged covering wall, a lip projected from the covering wall and adapted to be folded parallel with one of the side walls.

SEALING APPARATUS. C. J. Malhiot (to F. B. Redington Co., Chicago, Ill.). U. S. 2,346,776, April 18. A sealing apparatus for adhesively securing surfaces together with a strong, smooth and substantially uniform bond.

CONTAINER. W. B. Crane (to Alpak, Los Angeles, Calif.). U. S. 2,347,183, April 25. A shipping package constituting a die-cut single foldable blank of material, comprising a bottom panel defined by score lines and extensions adjoining said bottom panel, said end extensions having integral end and partial top walls overlying end marginal portions.

CONTAINER. C. Barbieri (to Dixie Cup Co. a corporation of Delaware). U. S. 2,347,236, April 25. A flat-bottom paper cup including a bottom member and a multi-ply body.

PACKAGE OPENER. K. C. West, Elmwood, Neb. U. S. 2,347,381, April 25. In combination with a package having a folded top portion, an elongated flexible element having a loop portion disposed downwardly in the package along opposite

sides thereof and across the bottom of said package under certain articles therein to be removed, the upper portions of the element being crossed at the top of the package with both terminals extended to one side of the package, said upper portions of the elongated element being disposed under the cover portion of the package.

OCTAGONAL BOX. G. Loth (to The Hinde & Dauch Paper Co., Sandusky, Ohio). U. S. 2,347,422, April 25. An octagonal box formed of a one-piece blank of sheet material and comprising top and bottom walls of octagonal shape, a pair of diametrically opposite side walls, one integrally and hingedly joined at its opposite ends to corresponding side edges of the two octagonal walls.

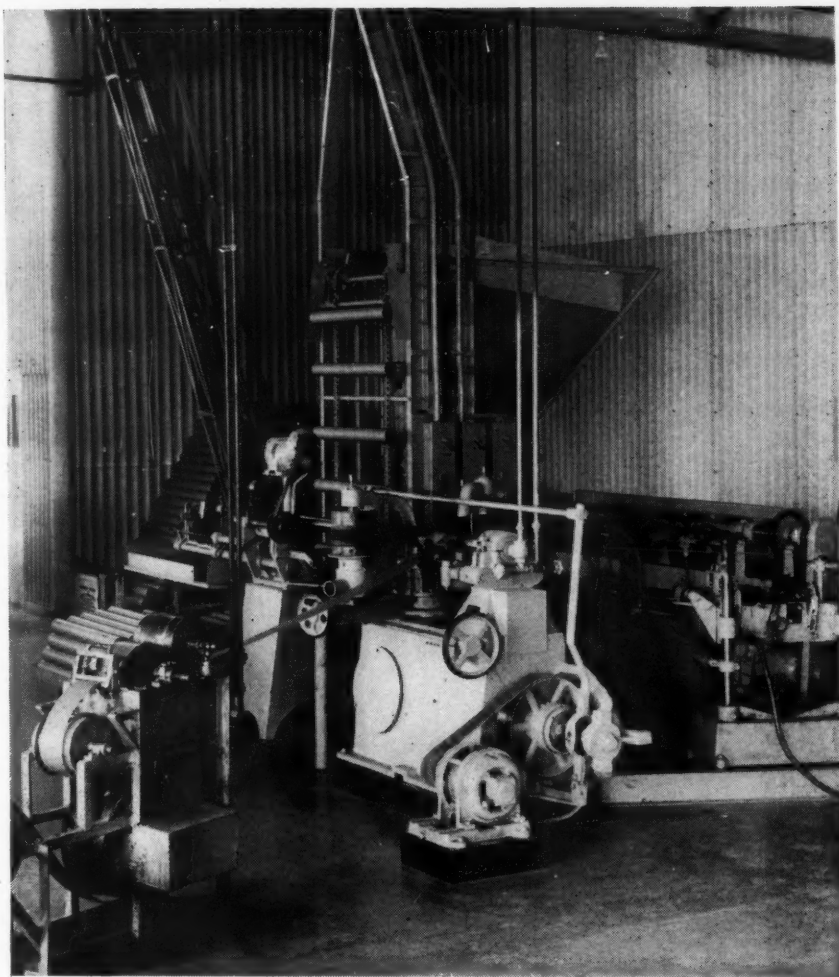
CLOSURE FOR BOTTLES, JARS, AND SIMILAR CONTAINERS. C. D. Magnuson, Chicago, Ill. U. S. 2,347,605, April 25. A closure comprising a pair of telescopically slidable members connected together, one of said members being a top member having a raised button thereon, a ledge around the upper edge of the shank of said button, said member having an enlarged aligned cylindrical portion below said button and plurality of relatively narrow longitudinally yielding fingers originating at and depending from the horizontal portion of said top member.

HEATING DEVICE FOR BOTTLE CAPS. C. W. Goodwin and H. W. Martin and H. G. Vore (to American Seal-Kap Corp., Wilmington, Del.). U. S. 2,347,407, April 25. A machine for delivering to containers partially preformed hood caps having foldable pleated skirts carrying a thermoplastic adhesive coating with the thermoplastic adhesive tacky for securing the folds together.

METHOD OF MAKING PACKAGES. L. F. Salfisberg (to Ivers-Lee Co., Newark, N. J.). U. S. 2,347,509, April 25. The steps in a method of making a package consisting in sealing together opposed layers of thin flexible material in zones certain of which extend along the longitudinal marginal portion of said layers to form a commodity receiving compartment between them having a mouth between two corresponding transverse marginal portion of said layers and simultaneously sealing a cover to the exterior of one layer along said longitudinal marginal zones with an end portion of said cover extending beyond said transverse marginal portions of said layers.

DISPENSING PACKAGE. B. T. Hoffmaster and G. E. Wauda (to Marathon Paper Mills Co., Rothschild, Wis.). U. S. 2,346,488, April 11. A package comprising a stack of rectangular sheets retained in a dispensing carton comprising a blank cut, scored and folded to form a rec-

FOR PACKERS WHO USE PAPER CANS



ROUND PAPER CAN MAKING SET-UP BY PACKOMATIC

Composed of Spiral Tube Winder—Cut-Off Saw—Elevator and Storage—Automatic Tube Cutter—Upender, Connecting Conveyors, etc. This equipment forms spiral wound tubes from chipboard in the roll, saws the tube into 40" lengths, then cuts tube into individual can body size. We also manufacture Automatic Cappers, Cap Presses, Cap Gluers, Shrinkers, Labelers, Fillers and Accumulating Tables.

The shortage of tin and scarcity of other packaging products has forced many manufacturers and packers to the use of spiral wound round paper cans.

If your product is adaptable to use in round paper cans we are at your service with our vast experience in automatically making, filling, capping and handling this type package.

Since the beginning of the war we have built

and furnished many manufacturers and packers with round paper can equipment. Our years of experience with this type equipment is yours for the asking.

We have served hundreds of manufacturers and will gladly confer with you on your particular problems. All negotiations are strictly confidential.

PACKOMATIC

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tangular front and rear panel, upper and lower end walls and side walls, the dimensions of said front and rear panels being substantially equal to the dimensions of said sheets.

SHIPPING CONTAINER. J. R. Belsinger (to Belsinger, Inc., Atlanta, Ga.). U. S. 2,346,466, April 11. A multi-part knockdown shipping container formed of pulp board material capable of carrying relatively heavy loads.

CONTAINER. M. Kleinmann (to American Safety Razor Corp., Brooklyn N. Y.). U. S. 2,346,538, April 11. A container having a plurality of container parts, one of said parts having a hold, said parts being adapted for movement with relation to each other to present in an open position of said parts a container opening through which the container may be loaded or unloaded and a closed position thereof a closure for said opening.

PACKAGING. D. R. LaPlace (to Bocji Corp., Pittsburgh, Pa.). U. S. 2,346,591, April 11. A package comprising a carton having overlapping lifts, an anvil member comprising an elongated strip of metal permanently attached to the inner face of an underlying lift and staples entered through an overlying lift having the ends thereof driven against and clinched by contact with said strip.

PACKAGE STRUCTURE. A. B. Drulard, New York, N. Y. U. S. 2,346,564, April 11. In a multiple-container dispensing package, a protective sheet enclosure having a backing sheet and a cover sheet folded thereover to protect the interior space between said sheets.

TEARING STRIP CAN. E. A. Mig-nacco (to M. J. B. Co., San Francisco, Calif.). U. S. 2,346,385, April 11. A can equipped with a tearing strip having a free tongue formed at its end with a longitudinally troughed portion terminating in a transverse kink at the base of the troughed portion for easy bending by a key applied to the rigid portion.

ADHESIVE TAPE SALES TICKET. R. E. Johnson, Indianapolis, Ind. U. S. 2,346,219, April 11. Sealing packages and ticket holding means comprising a tape folded along a longitudinally extending line to have an under portion, the underside of which is coated with an adhesive.

AUTOMATIC PRESSURE-SENSITIVE ADHESIVE TAPE DISPENSER. A. A. Anderson (to Minnesota Mining & Manufacturing Co., St. Paul, Minn.). U. S. 2,346,142, April 11. A device for dispens-

ing pressure-sensitive adhesive tape and applying it about the edge of an object comprising means for withdrawing tape from a supply roll, means for cutting it into accurately measured pieces of predetermined lengths, etc.

WRAPPING MACHINE. H. Rumsey, Jr., Nutley, N. J. U. S. 2,346,613, April 11. A wrapping machine to be used in twisting the projecting ends of sheet wrapping material which has been wrapped around the sides of a package which comprises supporting means, a driven pulley mounted on the supporting means for rotation.

DISPENSING RECEPTACLE. E. H. Fabrice (to Fabart Instrument Co., Chicago, Ill.). U. S. 2,345,737, April 4. A receptacle equipped with a sealing cap having a skirt portion engaged with the discharge end portion of the receptacle for limited movement from sealing to unsealing position.

CONTAINER. J. M. Hothersall (to American Can Co., New York, N. Y.). U. S. 2,346,165, April 11. A sanitary hermetically sealed container for food products and the like constructed to be opened by a cutting tool with the tool or cut parts coming in contact with the contents.

DIVIDED CARTON. F. W. Broderick (to Reynolds Metals Co., Richmond, Va.). U. S. 2,346,206, April 11. A collapsible carton having an open top except at its ends and comprising a bottom, side walls and top members connecting said side walls at the ends of the carton, end flaps hingedly secured to said top members for swinging movement in reverse directions.

CELLULAR EGG CARTON. L. S. Schwartzberg, Chicago, Ill. U. S. 2,346,400, April 11. An egg carton comprising an elongated blank of thin strawboard folded transversely on spaced apart parallel lines to provide a cover with a depending attaching flap along its front margin.

WALL & CLOSURE SUPPORT. P. Zalkind, New York, N. Y. U. S. 2,347,725, May 2. In a container comprising walls, a panel rotatably connected at the free end of one of said walls, a second panel secured to said first-mentioned panel and having a common terminal edge therewith along the opposite end of said first panel.

CONTAINER. J. M. Hothersall (to American Can Co., New York, N. Y.). U. S. 2,347,686, May 2. A single service

tamper-proof fibre container for oleaginous material, made of a leakproof fibre body.

CARTON. W. H. Inman (to Bloomer Bros. Co., Newark, N. Y.). U. S. 2,348,070, May 2. A carton made of a foldable waxed fibrous sheet material, and comprising a blank reversely folded upon itself adjacent to its centers, and having folded center adhesively secured and sealed to its opposite ends to provide inner and outer sets of carton side walls.

CONTAINER HAVING A POURING SPOUT. E. H. Leven, Chicago, Ill. U. S. 2,348,140, May 2. A dispensing container formed of an integral blank of suitable material, a relatively narrow side panel projecting from a side of the container having a part formed as a triangular extension projecting from this side of the container.

BOTTLE STOPPER. A. Moeller, Racine, Wis. U. S. 2,347,835, May 2. A combined nut and pivot for expansible bottle stoppers comprising an elongated internally threaded sheet metal sleeve and laterally extending pivot pintles formed on one end of the sleeve arranged at right angles to the opposite sides thereof.

COMBINED BOTTLE CLOSURE AND DISPENSER. L. L. Mallard, Norfolk, Va. U. S. 2,348,014, May 2. A container having an opening by means of which the contents of the bottle may be poured therefrom, a wall surrounding said opening and formed with a series of exterior screw threads having a channel formed therein, said channel communicated with said main opening over the top edge of the wall, and an interiorly threaded cap adapted to be screwed onto said wall and seat on the top edge thereof.

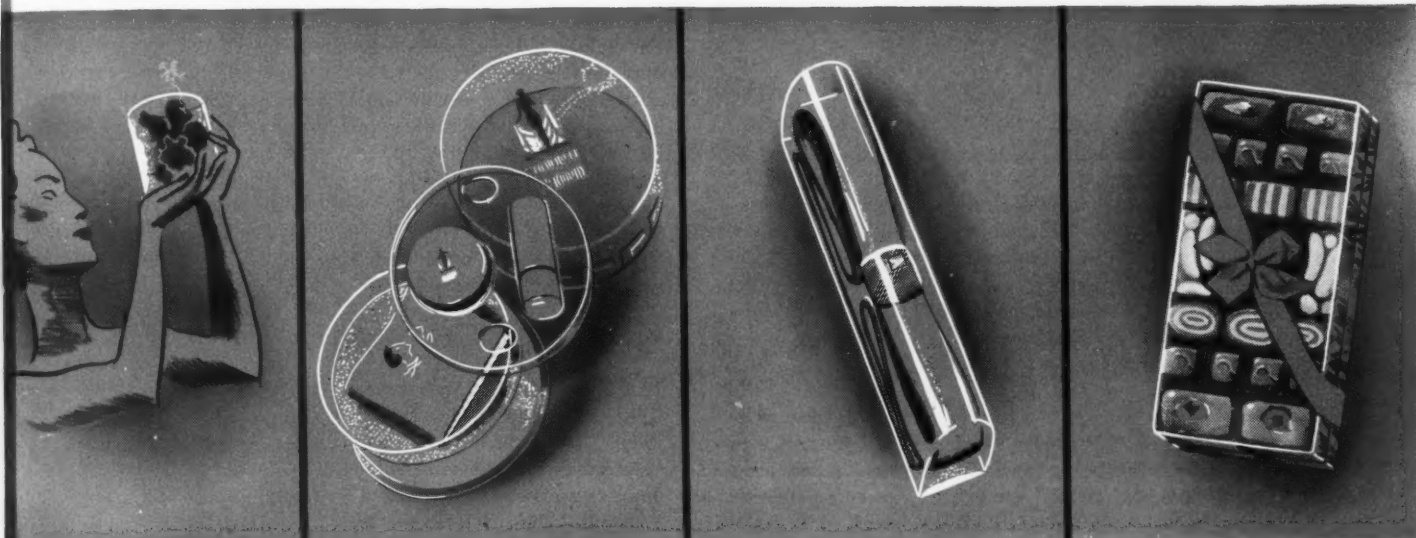
COMMODITY PACKAGE FOR CIGARETTES AND THE LIKE. T. E. Wright, Chicago, Ill. U. S. 2,346,407, April 11. A cigarette package of pocket size for "fifties" quantity comprising a wrapper formed to provide a container of flat elongated shape in which the cigarettes are packed one against another in rows extending lengthwise of the container and the cigarettes of each row are packed directly against those in the adjoining row or rows.

MAILING ENVELOPE. N. F. Dunlop, San Francisco, Calif. U. S. 2,346,419, April 11. An envelope formed from an integral blank of flexible material and having a front wall and a rear wall relatively overlying and connected at their bottom edge and at their opposite ends to provide an envelope pocket open at an upper edge.



Better Rigid Transparent Packaging When Ethocel Sheeting Returns

Ethocel Sheeting is a *different* sheeting because it's made of Ethylcellulose, the toughest cellulose material commercially available



Today, Ethocel Sheeting is at war.

But tomorrow . . . after V-Day . . . this rigid, transparent sheeting will assume its rightful place in commercial packaging—lending eye appeal as well as protection to a wide variety of products.

Because Ethocel Sheeting is made of Dow Ethylcellulose, the toughest cellulose material commercially available, it has outstanding qualities not found in ordinary sheetings. It does not warp or crack whether the temperature be -70° or 250°F .

. . . it refuses to become brittle or discolor with age or handling . . . it is easy and inexpensive to fabricate into seamless ovals, circles, or oblongs . . . all these advantages, plus many more, are due to the inherent qualities of its basic material and mark Ethocel Sheeting for extensive use in the future.

Complete information is available for package concerns interested in making plans now.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago
St. Louis • Houston • San Francisco • Los Angeles • Seattle

DOW PACKAGING PRODUCTS INCLUDE—SARAN FILM • STRIPCOAT • ETHOCEL SHEETING

Ethocel Sheeting



Equipment and Materials

PROTECTIVE PACKING MATERIAL

For protecting glass, plastics, industrial and surgical instruments, as well as products adversely affected by heat, cold or moisture, the Jiffy Manufacturing Co., Hillside, New Jersey, is marketing



its protective packing materials available in bags, sleeves, tubes, box liners and pads. The pads, for example, are made of fluffy filler material enclosed in a kraft paper cover, which the company states is water repellent and insulating. Sleeves like the one illustrated are made in any specified length and width.

ADHESIVE FOR WEATHERPROOF BOARD

A water-soluble vinyl resin adhesive known as No. 78 may be used in the manufacture of weatherproof paperboard shipping containers on standard box-board machinery, reducing the box-maker's operative costs. Board made with the new adhesive, developed by the Grasselli Chemicals Department of E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., is said to meet the government specifications for weatherproof shipping containers.

NEW THERMOPLASTIC CAN BE BOILED

A new thermoplastic that offers postwar possibilities for food, drug and cosmetic containers was announced June 1 by Charles Belnap, president of Monsanto Chemical Co., at a press conference at the Waldorf-Astoria, New York.

This thermoplastic material is said to be the first that can hold its shape and strength in boiling water, yet can be fabricated by injection molding, extrusion, heat-forming and blowing and is adaptable to film casting from solvent solutions.

Known as "Cerex," the new material has already found wide use in radio, radar and other military electronic equipment. Entire production is now going into war work, but civilian applications should include many uses in packaging.

Dr. Charles Allen Thomas, director of Monsanto Central Research Laboratories, characterizes Cerex as "a thermoplastic, readily moldable in standard molding machines and combining high resistance to heat with resistance to strong corrosive chemicals and high rigidity and strength."

The acid and alkali resistance of Cerex at elevated temperatures is believed to be superior to that of any thermoplastic. Cerex has been subjected to boiling sulfuric acid solution without effect. In a series of prolonged tests, parts molded of this material withstood conditions that corroded enameled steel and at-

tacked the surface of aluminum. Cerex has a heat distortion point above the boiling point of water and can thus withstand prolonged boiling or equivalent dry temperatures—a factor which should be important where sterilization is required.

Cerex may be opaque or transparent and can be made in varying hues by the addition of color pigments.

The press conference was arranged by Michael A. Brown, Jr., of Monsanto Plastics Division.

NEW GLYCERYL MONOSTEARATE

The Beacon Co., Boston, Mass., announces "Bemul," a pure white, edible glyceryl monostearate in bead form, available in commercial quantities. This chemical is said to be completely dispersible in hot water, also completely soluble in alcohols and hydrocarbons (hot). It should prove of interest to manufacturers of cosmetics, pharmaceuticals and foodstuffs.

PORTABLE BELT CONVEYOR

Serving as a horizontal power conveyor as well as an inclined unit, the Utility conveyor, made by Lamson Corp., Syracuse N. Y., has many uses wherever packaged goods need to be moved, stored or handled generally. It may be easily adjusted to any desired angle by pulling out the latch bar, which also acts as a handle, thereby facilitating stacking of incoming stock as well as outgoing orders merely by reversing the belt. Having no side guards to limit the width, loads wider than the 14 in.-belt may be handled. The unit carries up to 600 lbs. per minute at speeds up to 60 ft. per minute.

PRE-DETERMINED WEIGHT SCALE

The Toledo Scale Co., Toledo, Ohio, announce production of their "Speedweigh," a pre-determined weight scale having a sensitivity of $\frac{1}{4}$ oz. or $\frac{1}{1,000}$ lb. Its tare beam is notched (regularly 1 lb. by $\frac{1}{4}$ oz.) and the poise locks automatically. Weights are available for providing additional capacity to 5 lbs.

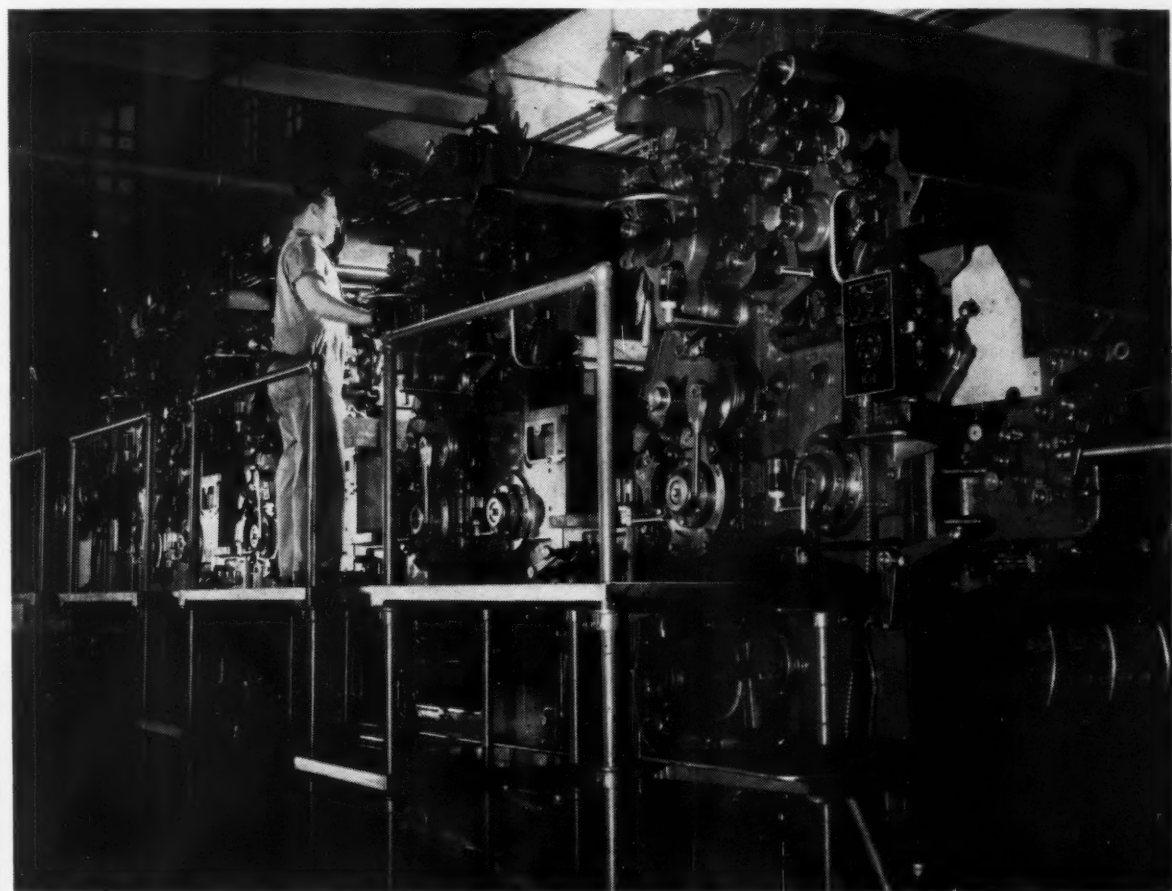
Available with one-inch or two-inch indicator travel per ounce, as well as end-tower or center tower models, this lightweight scale is equipped with built-in carrying handle thus affording easy mobility. Weighing mechanism is completely enclosed within the housing, and accuracy is not affected by out-of-level conditions. Automatic Dashpot controls movement of the dial indicator bringing it to a quick stop and also acting as a shock-absorbing device. Base, platters and indicator housing are of polished aluminum castings.



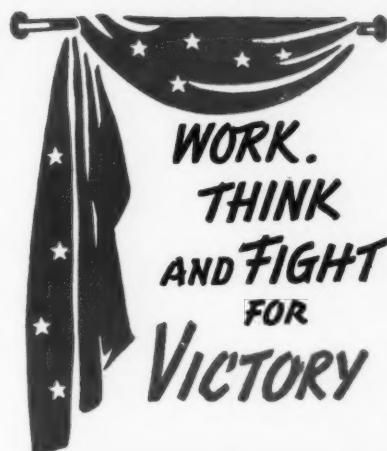
EXPORT SEAL PROGRAM

The Meyercord Co., Chicago, decalcomania manufacturers, have inaugurated a service to prepare decalcomania sketches of manufacturers' nameplates to be used in connection with the Export Seal program for non-Lend-Lease shipments, sponsored by the OWI. A concerted official effort is now underway to provide identification in foreign markets, and the official Export Seal, uniformly identified as "imported from the United States," will serve as a basis for wartime and postwar goodwill, OWI points out. The seal may be combined with the manufacturer's regular trademark or nameplate, and OWI offers translations.

MEETING ★ WARTIME DEMANDS



Millions of impressions are pouring from our giant presses for various government agencies, and for industry. Objectives: 1. Aid our fighting men. 2. Inspire Americans here at home to become active in many essential wartime operations . . . Come VICTORY, these facilities will be available to help YOU speed reconversion and secure the PEACE.



FORBES



LITHOGRAPH CO.

P. O. BOX 513 • BOSTON 2

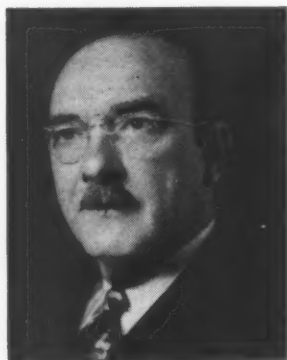
NEW YORK

CHICAGO

CLEVELAND

ROCHESTER

Plants and People



Carl Lambelet

H. H. Leonard, president of the **American Machine & Foundry Co.**, announces that beginning July 1, Carl Lambelet will assume the general management of the company's manufacturing activities. Mr. Lambelet's resignation from the presidency of the New Jersey Machine Corp. was reported in the June issue of **MODERN PACKAGING**.

Heretofore prominent in the manufacture of bakery, cigarette and cigar machinery, the American Machine & Foundry Co. plans to expand its postwar activities to include larger operations in the field of packaging machinery.

Paul M. Gilfillan is vice-president and general manager of Shellmar Products Co., in charge of coordinating, engineering, development and manufacturers at its main plant in Mount Vernon and in various branches and sub-contractors.

Stokes & Smith Co., Philadelphia, announce the appointment of the E. M. Noel Co., Boston, as their New England representatives. L. M. Selleck will have control of the special packaging department.

Charles C. Carr has been appointed chairman of the public relations committee of the Assn. of National Advertisers. Mr. Carr is director of public relations and advertising of the Aluminum Co. of America.

Louis W. Sutherland, chairman of the board of Sutherland Paper Co. and mayor of the city of Kalamazoo, received the honorary degree of Doctor of Laws (LL.D.) at the commencement exercises at Kalamazoo College on June 12.

At the fourth annual meeting of Point of Purchase Advertising Institute, Inc., the following officers were elected: President, George L. Rose, president of The Mounting and Finishing Co.; vice-president, George C. Kindred, president of Kindred, MacLean & Co.; Secretary-treasurer, Homer H. Johnson, vice-president of Snyder & Black Co. Clifford E. Hodder was appointed executive secretary.

F. H. Rhoden, formerly chief of the Soft Fibre Products Section of the Cordage Branch of WPB, has been named to assume all burlap responsibilities for the Chase Bag Co. to replace Duane Hall, retiring director of purchases.

The **Ohio Boxboard Co.** has announced the appointment of Arnold L. Crowell as sales manager and Melvin E. Barthen in charge of carton and container sales.

Package Machinery Co. and **Phin Sales Co.** of Toronto, Canada, have signed an agreement whereby the Phin firm will become exclusive Canadian manufacturers of standard wrapping machines of Package Machinery's design.

Frank Cray, who has been Eastern district manager of International Printing Ink Division of Interchemical Corp., has

relinquished his branch administrative duties in order to concentrate on customer contacts and postwar plans. He will continue as vice-president of International Printing Ink. W. F. Cornell will succeed Mr. Cray as Eastern district manager.

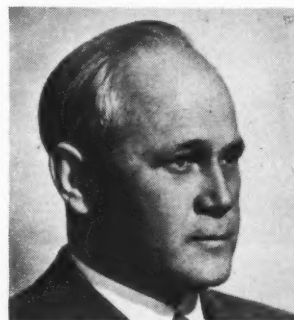
Robert Curran has been appointed representative of the Owens-Illinois Can Co. in Philadelphia, according to S. J. McGiveran, vice-president and general manager.

J. H. Mosley has been elected vice-president and a member of the board of Standard-Knapp Corp. of Portland, Conn.

D. A. Snyder, manager of Menasha Products Co.'s food packaging division, has announced the appointment of John H. Snyder, sales manager of packaging for vegetable oil industries.

The following companies were awarded the Army-Navy "E" for production: Kimble Glass Co., Vineland, N. J., American Can Co.'s Amertorp Plant, Forest Park, Ill., and Rutherford Machinery Co., Rutherford, N. J.

Dr. Joseph G. Davidson has been elected president of the Carbide & Carbon Chemicals Corp. and Carbide and Chemicals, Ltd. The following were elected vice-presidents of the company:



Dr. J. G. Davidson



J. W. McLaughlin

L. J. Bowditch, W. S. Brackett, H. S. Bunn, G. T. Felbeck, R. N. Graham, G. B. Landes, H. B. McClure and W. F. Reich, Jr.

Announcement was also made of the election of James W. McLaughlin as president of the Bakelite Corp. and the following were named vice-presidents of that company: C. W. Blount, Gordon Brown, H. S. Bunn and R. B. Lowe.

James Anderson has been placed in charge of sales promotion for the plastics engineering division of The Dow Chemical Co.

Charles H. Cashmore, president of the Paterson Parchment Paper Co., died on Friday, May 26, at the age of 67.

Louis Mansfield Rossi, vice-president, Bakelite Corp., died May 25, following a sudden illness.

E. H. Lewandowski, assistant comptroller of the Menasha Products Co., died suddenly in Chicago on May 18, while on a business trip.

Harold C. Wane of the sales department of Sherman Paper Products Corp., died May 29, at the Newton Hospital, Newton Upper Falls, Mass.



Post War SHADOW

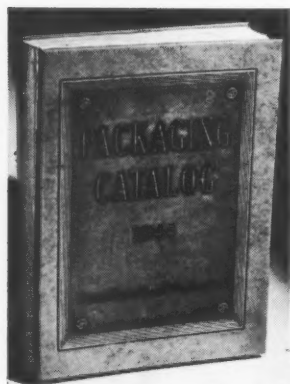
Planning for tomorrow's packaging problems is a vital duty of today... War born materials and ideas have cast their shadow over postwar designing... Let Apaco Engineer your containers into the light of Modern Packaging.

ATLANTA BAPER COMPANY

Atlanta

Established 1868

For Your Information



The 1944 **PACKAGING CATALOG**, ready for distribution soon is keyed to the theme "Planning for Re-Conversion." Based on wartime experience, this edition has been planned to be helpful in transforming the war machine to peacetime activity. The volume's fifteen sections contain many new and factual articles by Government officials and individuals well versed in specific aspects of packaging. The fifteen main section headings are: 1. Planning for Re-Con-

version; 2. Package Planning; 3. Packaging Law; 4. Packaging for Government Orders; 5. Cartons & Boxes; 6. Bags—Envelopes—Pouches; 7. Glass—Pottery—Closures; 8. Cans & Tubes; 9. Labels—Seals—Tags—Marking Pieces; 10. Packaging in Plastics; 11. Adhesives; 12. Wrappings—Coatings—Laminations; 13. Machinery & Equipment; 14. Packing for Shipment; 15. Merchandising.

The Buyers' Directory has been completely revised and cross referenced and, supplementing the fifteen main sections of basic facts regarding materials, operations, and properties charts, it is a worthy contributing factor to this encyclopedia of packaging. Copies may be obtained from Packaging Catalog Corp., 122 E. 42 St., N. Y. C. Price, \$2.50 in U. S. A.

The National Paper Box Manufacturers elected the following officers at their convention held recently in Chicago: Walter T. Miller, president, Alfred M. Bond, vice-president, and Henry Aeinsegger, treasurer. The board of directors consists of C. Knolton Shaw, Jr., Alan S. Schleicher, Paul A. Clement, Fred C. Kewell, Walter E. Trum, Sr., and William P. Datz, Jr.

The Spice Mill magazine, New York, is now accepting entries for the 8th annual Food Packaging Show of which it is the sponsor. Containers of coffee, tea, spices, flavors and related products are eligible and no entry fee is required. The closing date for the 1944 competition is August 15. Entry blank is available upon request.

A booklet called "The What, Where, Why, How of Resyn Adhesives" has just been published by National Adhesives Division of National Starch Products Inc. This booklet traces the development of synthetic resin adhesives, defines the trade terms associated with them, describes their properties, suggests applications and outlines procedures for handling various types of resinous products. Copies may be had by writing the company.

The National Canners Assn. home economics division has published a new recipe booklet entitled "Practical Recipes Using Canned Foods," developed in its own service kitchen by Katherine R. Smith. The point of the booklet is to acquaint the housewife with the variety of canned foods on the market.

The glass industry, in cooperation with beer, beverage and milk interests, is conducting its second annual "bottle roundup" campaign to get all available bottles into reuse. The Glass Container Assn. asserts that with production of glass jars and bottles now running 145% more than in 1940, continued maximum output is being threatened by paperboard and manpower shortage.

CORRECTION: Table III in the article "Polystyrene," May issue, p. 120, was compiled from research data prepared by the Bakelite Corp. We regret that credit was omitted.

The Welcome Wagon Service Co., announces the availability of its entire United States and Canadian organization of City Hostesses for the purpose of conducting consumer and dealer market studies for national advertisers, advertising media and broadcasting stations.

Canadian newsprint manufacturers have answered U. S. criticisms that the pulp and paper industry might do more with a four-page booklet entitled "Newsprint Supply in Wartime," published by Newsprint Assn. of Canada. Although it was originally printed for distribution within the industry it is felt that it should be studied by all U. S. suppliers. Copies may be had upon request to the Assn., Montreal, Canada.

A new catalog section on adhesives or cements has just been published by The B. F. Goodrich Co. and is available upon request.

Carle C. Conway, chairman of the board and president of Continental Can Co., Inc., announced the acquisition by his company of the Reynolds Molded Plastics, division of Reynolds Spring Co. There will be no change in the personnel or policies of the new division, nor in the location of the plant in Cambridge, Ohio.

The motion picture "Proving Ground," built upon the theme that war has been a proving ground for some types of plastic packaging that will be newly important in the postwar civilian market, was given its premiere showing May 24 at the Waldorf-Astoria Hotel, in New York, by the Cellanese-Celluloid Corp.

The full-color picture, with an interesting sound-track description, portrays the importance of proper packaging for getting war material to the front ready to fight. Several scenes show actual application of packaging innovations developed by the industry during wartime, and the picture demonstrates how these innovations can be carried over to peacetime use.

The film is to be used by Cellanese-Celluloid in a series of round-table meetings with packaging people. Meetings will be held for fabricators, converters, laminators, designers, and all those whose business is packaging. Additional meetings will be scheduled for manufacturers and merchandising stores using packages.

A scene from the motion picture "Proving Ground" showing single unit plastic-packaged containers of iodine, designed for self-administration by a wounded soldier. The purpose of the motion picture is to acquaint the civilian market with such new war-time packaging developments.



When it's RECONVERSION TIME...

- ... there will be many new materials, methods and machines for packaging and converting,
- ... pre-war standards of production speed, product protection and package distinction will go into the discard,
- ... new and improved stocks, coatings and containers will evolve from wartime developments,
- ... and adhesives of yesteryear will likely fall short of your needs.

Then, just as now, National will have the answers to your packaging and converting problems.

PLANNING FOR POST-WAR?

Do not overlook adhesives . . . so important as to tie up your entire plant . . . yet so trivial as to frequently escape listing as a production cost. Discuss your plans *now* with our adhesive engineers.

"RESYN" ADHESIVES

What are they? Where can you use them? Why are they so popular? How do you handle them? These, and many other questions relating to your current and post-war packaging adhesive problems, are answered in this new Handbook...



**FREE — SEND FOR
YOUR COPY TODAY!**

NOTE: Resyn Adhesive #172 complies with the new Army-Navy Sealing Spec. JAN-A-101* covering overseas shipments in fiber containers. (*Copy on request.)

National ADHESIVES

DIVISION OF NATIONAL STARCH PRODUCTS INC.

MAIN OFFICE: 270 MADISON AVENUE, NEW YORK 16 • Chicago • Philadelphia • Boston • San Francisco • and All Principal Cities

LUSTEROID
"the Jewel Package"
**FOR TOMORROW'S
 PACKAGING NEEDS**



In planning your post-war packaging program, give your products a two-fold advantage with modern LUSTEROID containers.

These distinctive vials and tubes not only provide all the protection you want, but equally important, furnish a "jewel-package" display that serves as a constant silent salesman.

Along with these benefits, you get the economies of light weight, lower shipping, packing and handling costs, and the elimination of labeling expense because your sales message is reproduced as an integral part of the container.

Choice of all colors—clear or opaque. Standard diameters from $\frac{1}{4}$ " to $1\frac{1}{4}$ " and lengths up to 6". Cork, slip-on or screw-cap closures.

Write for details today.

LUSTEROID CONTAINER CO., INC.

Formerly Lusteroid Division of Silcock-Miller Company

Office and Factory

10 W PARKER AVENUE, MAPLEWOOD, N. J.
 MAILING ADDRESS SOUTH ORANGE, N. J.

Army vegetable standards

(Continued from page 93) permits a new producer to get into production without the necessity of obtaining expensive and hard-to-get packaging and sealing equipment.

The bulk packages can be assembled without mechanical equipment of any kind. Only loose frozen vegetables are packaged in bulk packs. Before the test at Camp Blanding, bulk packages were permitted ranging in weight from 30 to 40 lbs., but the test revealed two objections to the larger units. One was the fact that it tended to limit the occasions upon which the large unit could be issued, since a kitchen would have to be feeding between 300 and 400 men to consume a unit of this size. This eliminated the possibility of issuing the large bulk package to companies, with few exceptions, since company strength is usually in the neighborhood of 200-250 men. The second objection was the fact that the case was large and, being loosely packed, with a minimum of interior support, it tended to bulge and collapse when stacked in storage. Consequently, if there were any signs of poor seals, the cases were not in condition for reshipment.

By permitting the packer to fill the pack in variables of 1 lb. between the ranges of 20 and 30 lbs. net, it became possible to standardize on one size of case for each of the vegetables packed. This again, as in the case of the institutional package, permits a simplification of the manufacturing, procurement and inventory problems.

Bag liners

At present, only one type of bag liner for bulk containers has been specified. However, there are several others which are in use and which are giving very satisfactory service. The bag liner called for is of the multiwall type with an inner liner of laminated wet-strength glassine, which is one of the materials permitted for use as a liner in the institutional packages. The outer wall of the bag is made from 60-lb. kraft paper. One important requirement of this bag is to have it constructed larger in circumference than the inside circumference of the case. In this way, it is possible to relieve the bag of all the weight stress, permitting the case to carry the load. The bags all are sealed by multiple folds.

Case for bulk pack

There are two types of cases permitted for use with bulk packs. They are made either from 200-lb. test solid fibre or from 200-lb. test corrugated board. When using a corrugated board, it is necessary that the board retain at least 50% of its bursting strength when one side has been exposed to water. This is covered in a test which requires that the outer surface of the board shall be exposed for three hours at room temperature to a column of water 3 in. high and not less than 4 in. in diameter. Air is permitted to circulate freely under the test specimen while the top surface is exposed to the water. At the end of this period, the excess water is removed from the board and with the wetted surface up, is tested for bursting strength.

The cases for the bulk packs may have manufacturer's joints which are either cloth taped or stapled. However, if they are stapled, it is necessary to provide some protection for the bag, either by applying a strip of gummed kraft tape over the staples or by placing a chipboard pad between the staples and the bag. Top and bottom pads are also called for.

It is very important when filling the bulk package to vibrate it as much as possible for the purpose of settling the contents. If this is done, it is possible to obtain a much more compact

SULFA DRUGS PACKED FASTER on AMSCO

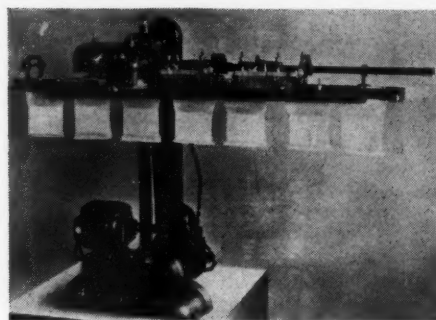
HI-SPEED HEAT SEALER

Sulfanilamide crystals and other sulfa drugs packed in heat-sealed Bags are more speedily turned out when AMSCO HI-SPEED ROTARY HEAT-SEALERS are used. This has been proven by actual experience of some of the largest producers in the country.

The AMSCO machine's rotary action gives extra speed to a normally slow operation—transforming it into (in many cases) the fastest part of the packaging line.

DATA: 450 linear inches of perfect moisture-proof heat-seal per minute—faster performance than most other packaging operations, transforming the heat-seal from a bottleneck to a speed-up; simplicity of operation, reducing employee fatigue and raising per capita production. AMSCO gives maximum production with lowest labor, space and up-keep costs.

Our engineers will tell you more, help you plan for this speedy equipment.



AMSCO Machines Heat-Seal:

explosives	tank and truck parts
sulfa drugs	dehydrated soup
plaster bandages	batteries
first-aid kits	teletype ribbons
emergency field rations C, J, D, K	tobacco
fruit bars	blood plasma
lemon extract	photographic film and supplies
bouillon	rifle and machine gun parts
cocoa	rivets and small assemblies
salt and sugar	
life boat rations	



AMSCO PACKAGING MACHINERY, Inc.

31-31 Forty-Eighth Ave. Stillwell 4-4840 Long Island City 1, N.Y.

that creative touch

.....LAST WORD IN "ON THE PACKAGE" PRINTING SENDS HELENA RUBINSTEIN'S "HEAVEN SENT" OUT INTO THE WORLD SELF-ASSURED AND LOVELY IN ITS PERFECTION.

SILK SCREEN PRINTERS TO THE COSMETIC FIELD
CREATIVE PRINTMAKERS GROUP
14 WEST 17 STREET • CHELSEA 3-6803-4-5

NO SALES

BROKEN PACKAGES are a headache to the retail merchant. They represent a definite loss. Remember, retailers push lines of least resistance, and poor packages are real resistance.

Do something about it, do it now. Use Bingham's Star Brand Packaging Glues and Adhesives.

You will produce better packages at minimum packaging costs and get

"Better Sales from Better Packages"

Our business is to help you

"Make Your Identity Stick"

Competent technical service free.

BINGHAM BROTHERS COMPANY

SINCE 1826

Every Kind of Roller and Adhesive

Main Office: 406 PEARL STREET, NEW YORK 7

PHILADELPHIA BALTIMORE ROCHESTER NEWARK GARWOOD



WHEN a little MEANS a lot!

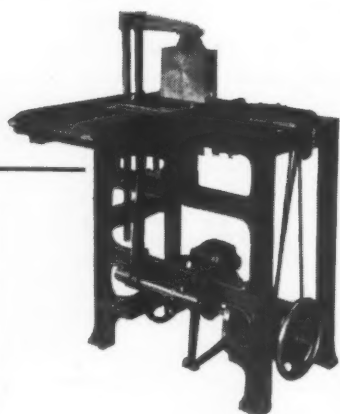
Today any little "extra" service derived from your equipment goes a long way towards solving unlimited present-day difficulties and problems.

Little wonder therefore why manufacturers with PETERS Packaging Machines are realizing so much additional satisfaction from their equipment today.

Little "extra" features incorporated in these PETERS packaging units originally designed for peacetime production are delivering unusually desirable results under wartime conditions in terms of maximum package units handled with highest conservation of material, time and labor.

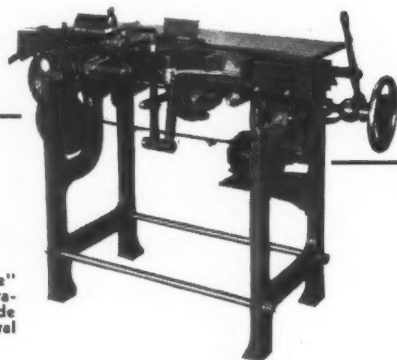
Performance of such high character speaks for itself. It establishes a definite preference in users' minds for this equipment when replacements or additional installations are needed.

Interested potential users are advised to write NOW regarding an installation when this equipment is again generally available. Send a sample of each size carton you desire to handle to enable us to recommend equipment to meet requirements.



PETERS
JUNIOR CARTON
FORMING AND
LINING MACHINE

Sets up 35-40 "Peters Style" cartons per minute. Requires one operator. Can be made adjustable for several carton sizes.



PETERS
JUNIOR CARTON
FOLDING AND
CLOSING MACHINE

Closes 35-40 "Peters Style" cartons per minute. No operator required. Can be made adjustable also for several carton sizes.

PETERS MACHINERY COMPANY
GENERAL OFFICE AND FACTORY
4700 RAVENSWOOD AVENUE, CHICAGO, ILL.

pack. Much trouble is likely to occur if the case is slack filled, since then the contents provide nothing toward the stacking strength of the filled case, and the case itself has to carry the entire load. A 200-lb. test case made from either solid fibre or corrugated board would scarcely be strong enough to carry the weight that is encountered in a 12 ft. stack if it had no inside support at all. As mentioned before, the sealing of the flaps in a bulk case is much more important than on the cases for the institutional packages, for the simple reason that so little interior stacking strength is obtained from the contents.

The Army Specification for Packaging of Frozen Vegetables, as written, specifies only a few types of materials which can be used for packaging frozen vegetables. This was done in order that the specification might be simple and that it might employ the best type of civilian packaging and packing. However, the specification is so written that any type of material that is proved satisfactory for use will be permitted for Army packages upon submitting the material for approval to either the Office of The Quartermaster General, Washington, D. C., or to the Subsistence Research and Development Laboratory, Chicago.

The frozen food industry has made tremendous strides in the last ten years in developing packages which will carry the product to the customer in the best and most desirable condition.

They have also been responsible for a feature which is not common in many other industries, and that is, that they have been able to standardize on the type of packages they are using, both for size and the type of materials. This has given all the industries connected with frozen vegetables the opportunity of developing improvements in the types of packages used, which would not have been the case if each concern had its own separate size and construction of package. It is hoped that, as a result of the tests run in Florida, the knowledge gained will lead to the provision of still better packages in the future.

Acknowledgment

The author gratefully acknowledges the assistance of Carl Kolb, Birds Eye-Snyder, Inc., New York, and Gene Lowey, Container Corp. of America, Chicago, in the preparation of this article.

Heating plastic coatings

(Continued from page 101) use of an ingenious partition which divides the inner vat into two compartments. One compartment is devoted to the heating and melting of the cold compound, while the other compartment forms the actual working tank for dipping. The partition is removable, so that, if desired, the entire volume of the inner vat can be used for dipping after the initial melting.

The adjustable partition is itself heated, and it not only keeps unmelted portions of the compound from the dip section but also acts as a heat baffle. It has been found that the heated partition permits the addition of cold compound in the melting portion of the tank without adverse effect on the temperature of the compound in the section devoted to dipping, the manufacturer says.

The Aeroil tank was recently given a test run at an Ohio installation, with representatives of the Ordnance Department in attendance. It was given qualified approval, and if further tests now under way on the points mentioned above

#15 is now ready



SEND TODAY FOR
"THE COLOR OF MUSIC"

Color and music have varying degrees of affinity in accordance with the temperament of the individual. Light and sound wave reactions on the mind are told in an interesting way in THE COLOR OF MUSIC.

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DIVISION - GENERAL PRINTING INK CORPORATION
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BALTIMORE TORONTO

Bottles submerged 9:00 A. M.
April 29, 1944
Photograph taken 10.00 A. M.
May 2, 1944



SHEDDING WATER LIKE A DUCK WITH

GLU-WELD

MEDICAL SUPPLIES going to our armed forces overseas are subjected to mighty hard treatment. That is why it's so important for all these supplies to be securely labeled and packaged with waterproof adhesives. And GLU-WELD adhesives assure the arrival of valuable war materiel at the fronts with labels securely affixed regardless of climatic conditions.



for ABSORBENT papers

When Johnny comes marching home he will want the same absorbent paper conveniences he has been using in camp and even at the war front.

Are you ready for the increased demand that will come when the Axis is downed for the count?

Yes — we'll all work and win the war first, then we will put the returning heroes back on the job of serving the home front.

You will make the paper napkins, towels, facial tissues and toilet tissues. We will supply new high production machines for their production. Let us hear from you now!

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

IMPORTANT TO DRUG and CHEMICAL MANUFACTURERS

Medical Department Tentative Specification No. 3073-C was issued on March 25, 1944 to supersede Specification No. 3073-B. Paragraph D-2 of this specification specifies that labels on unit containers shall be securely affixed by a non-water soluble adhesive. Testing qualifications require samples to be completely immersed in tap water of 75° for 48 hours, removed and dried for 24 hours. Separation of an individual label from container may not exceed 25% of glued area.

Paragraph D-4 states that corrugated fibreboard packs must be sealed in a waterproof paper bag or wrapper. The seams, joints and closures of the paper bags must be sealed with asphaltum or a non-water soluble adhesive, and their construction must provide protection equal to that expected of the body material.

We recommend for waterproof labeling C-802 GLU-WELD. For bag liners, C-827 or C-255 GLU-WELD is recommended.

Write today for full information about GLU-WELD

IN THE EAST

Union Paste Company

1605 Hyde Park Ave., Hyde Park 36, Mass.

IN THE MID-WEST

The F. G. Findley Co.

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PACKAGE COMPETITION



WILL BE *Color*

Thoughtful postwar plans call for glass packaging with extra color, brilliance, more attention value and greater sales appeal. A properly selected over-all color can improve an attractively designed bottle or transform a plain ordinary bottle or jar into a prize winner. Our duplex (two-coat) COLOROID process also protects the product from sunrays.

We can discuss volume production with you now for your postwar needs.

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prove satisfactory, it is expected to be recommended for use by Ordnance contractors.

Equipment using the same general indirect method of heating is now being manufactured by the Castaloy Corp., Detroit. Others reported developing equipment based on this principle are Helmco, Inc., Chicago, and the D. C. Cooper Co., Chicago. Other manufacturers who are at present engaged on the heating problem but who may or may not be using the indirect method are the Process Heating Equipment Corp., Detroit; the Sta-Warm Electric Co., Ravenna, O., and the Pereny Equipment Co., Columbus O.

Ordnance representatives state that the problem of proper temperature control with the direct, electrical strip heater method are slowly being corrected, and there are now several direct-heating tanks available that are showing satisfactory performance.

It is expected that the over-all result of this research and development on heating methods will be to give the ethyl-cellulose stripping compound, as a package, a much greater life expectancy than had previously been anticipated.

Conference of technologists

(Continued from page 118) with the handling of supplies state that a case of food products should not weigh more than 50 to 60 lbs.; the natives and soldiers can handle a case of this weight all day. Most of the oversized shipping containers have now been eliminated.

The use of paper labels on canned supplies, said Capt. Bailey, has greatly reduced their storage life. Many of the first supplies shipped were packed in cases of poor construction, made from unsuitable materials. Often corrugated boxes did not last long enough to be taken from the ships in one piece. The first solid fibre boxes were little better. The wire-bound boxes were "in a terrible condition." Many of them became unfastened during handling. The solid nailed boxes with straps were found to be far superior to any of the first shipping containers. The solid fibre weather-proofed boxes with the sleeves, now in the field, look very good so far. Thousands of cans were ruined by rust in the early shipments, Capt. Bailey said, and this problem will continue in connection with unlacquered cans.

The amount of spoilage of food from other than handling and weather damage is not great. Some pilchard packed on the West Coast and some chili packed in Chicago were the only bacteriological spoilages noted on canned foods, except for canned milk. The latter has caused more trouble by far than any other product, Capt. Bailey reported. At one time, the quartermaster in the Fiji Islands asked that no more of it be shipped to that base. Wastage of food due to poor vacuum of canned goods is a much more serious problem than commonly realized Capt. Bailey stated that he saw huge piles of cans that had been discarded because they looked like "swells." He called for greater vigilance on the part of canners to avert this difficulty. The speaker emphasized that lacquer can coatings should be applied subsequent to processing, just before the cans are cased.

If MODERN PACKAGING is late

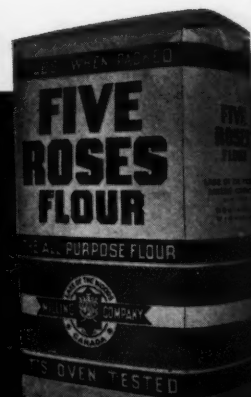
Due to production and transportation difficulties beyond our control it is quite possible that your copy may be reaching you later than normally. If so please bear with us during this emergency period.

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with the

SEALTITE

Bag Sealer



Your bag package will stack as easily as a carton if it is sealed with a SEALTITE Bag Sealer. SEALTITE uses any standard gusseted paper bag. Because of the method of settling and sealing it delivers an attractive, sift-proof package with a square, flat top.

And SEALTITE is FAST. It handles 2 to 10 lb. bag packages at speeds ranging from 15 to 50 bags per

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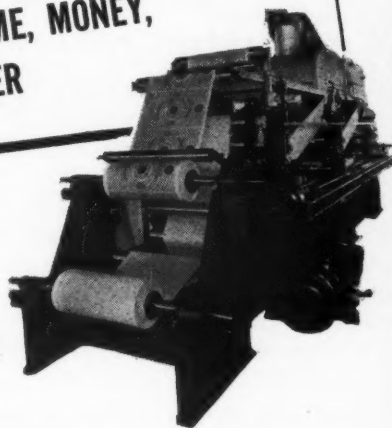
HYROTO CONVERTING EQUIPMENT
SAVES TIME, MONEY,
MANPOWER

Model B-26 handles three colors on materials 6" to 26" wide.

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machines coat, print and laminate paper, cardboard, foil, kraft, cellophane, Plio-film, tissues, fabric. Operating at high speeds, they apply cold or hot fluids as inks, lacquers, analines, waxes, adhesives and metallics to the above materials. For use by converters, printers, bag-makers, label and wrap producers. Available in complete range of sizes. Special machines designed.

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Without Delay . . . makers and shippers of Ordnance Items can obtain, from our stock, wrapping and packaging materials fully meeting U. S. Government Specifications. We are prepared to ship immediately:

Grease-proof bags meeting specifications Grade A Type II, five stock sizes, heat sealing.

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Waterproof packing list envelopes and fibreboard packing list envelope protectors, etc., etc.

Write for Portfolio of Samples of these and other Ordnance Packaging Materials quickly available from stock.

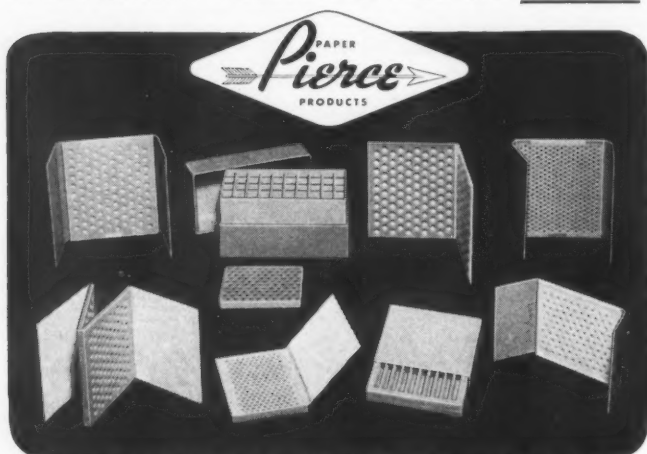
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Specialists in Special-Purpose Paper Packagings

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SEND US YOUR SPECIFICATIONS ON STANDARDIZED ITEMS, OR LET US HELP DEVELOP NEW USES TO MEET YOUR NEEDS. WE ARE EXPERIENCED PAPER CONVERTERS... HAVE A NEW, UP-TO-DATE PLANT... AND ARE IN A POSITION TO SERVE YOU WELL AND PROMPTLY



NEW...SAF-T-PAK BOXES FOR SMALL PARTS

Pierce Saf-T-Pak Boxes: specially designed to individual requirements for the protection of small precision parts and other fragile items easily damaged in shipment. Can be produced from kraft, chipboard, or special compositions in a wide variety of forms with die-cut cells, cushion liners, partitions, other construction features of protective packaging.

SPIRAL-WOUND PAPER TUBES AND CANS

Pierce spiral-wound tubes and cans: in diameters from $\frac{3}{8}$ " to 6" — any required length — from waterproof paper, kraft, chipboard, special compositions. Also, Pierce Saf-T-Pak tubes with felt liner for protection of fragile parts in shipment. Pierce protective caps and tubes for male and female threads: made in any size, waxed or plain.



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Manufactured by

PIERCE PAPER PRODUCTS CO.
2730-A AUBURN STREET, ROCKFORD, ILLINOIS

Trends in cellophane

(Continued from page 86) board header which identifies the product at a glance and conveys a sales message as to cleanliness and convenience. Eliminating waste and providing easy store handling, the package is designed particularly for self-service stores. The header is clipped on or, if thermoplastic-coated, may be heat-sealed. An arresting suggestion of garden freshness is conveyed by the wheelbarrow design.

There are new cellophane discs to fit over can tops, so that when the housewife strips off the cellophane with a tape affixed to the edge of the label, she has a sanitary can top immaculate of shelf dirt and multiple stock-handling.

New containers projected for quick-frozen foods show one side of the package designed for complete visibility of the contents through the cellophane. The consumer can see the size, color and quantity of the peas or other product contained in the package. In addition, the inner container of cellophane is engineered with a view to automatic machine handling.

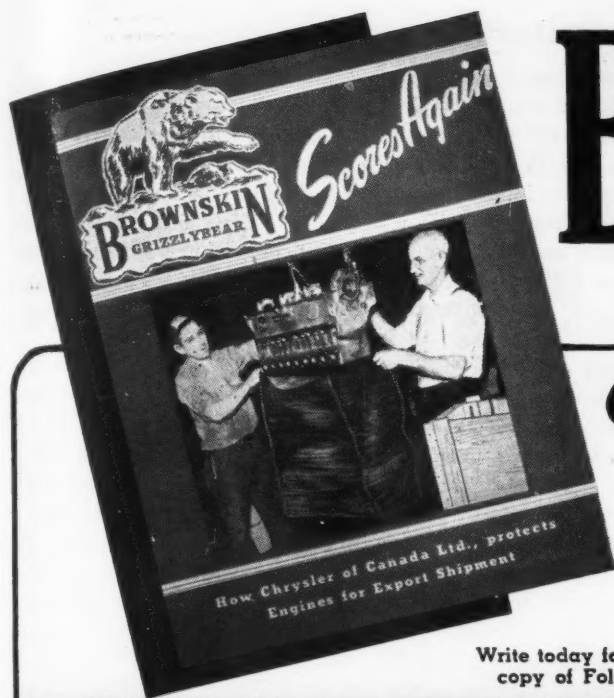
Machine-wrapped bottles for medicines and such products, protected by a sleeve of cardboard (Fig. 9), offer new possibilities of cutting down breakage, as well as providing convenience in stacking and attracting increased attention by their appearance. The cellophane wrappers carry tapes to make it possible to remove them quickly and easily.

In an exhibit, entirely directional rather than specific in nature, it is impossible to determine all of the changes that might be necessary to adapt specific packages to specific products. At this point, when the bulk of all cellophane is appropriated for military purposes, there is a distinct lack of facilities and materials for crystallizing these suggestions into realities. As postwar-trend pointers, however, these suggestions are interesting and important.

Credit: Packages illustrated herewith are part of a collection created by the cellophane Division of E. I. du Pont de Nemours & Co., Inc., and executed by Bliss Display, New York. Trade names appearing on the packages are fictitious.

Washington review

(Continued from page 126) glass industry's greatest trouble at the moment seems to be lack of shipping containers—progress is being made toward getting more units into the carton. . . . Pulp, paper and paperboard machinery has been removed from the restrictions of M-126. . . . Paper cups and food containers of the nested kind have been assigned a production rate and distribution pattern. . . . WPB has called attention to the fact that inventory restrictions for new fibreboard shipping containers apply to V-boxes as well as to civilian containers. . . . The printing ink industry has been informed that chrome pigments will probably be maintained at the present quota through the summer—that certain colors will inevitably be affected by shortage of phthalic anhydride. . . . OPA will allow commissions to brokers on waste paper identical with those already allowed. . . . An increase of as much as 65 cents per 100 lbs. in present ceiling prices of white rye flour adhesives for use in manufacture of corrugated paperboard has been allowed by OPA. . . . Control of paperboard production, including folding and setup, has been transferred from Conservation Order M-241 to Order M-378. It will be administered by the Paperboard Division. Reserve production has been reduced from 45 to 40%. . . . Through an amendment to Order L-103-b, covering the use of glass containers, vials have been eliminated from both the base period quota and from the currently computed quota.



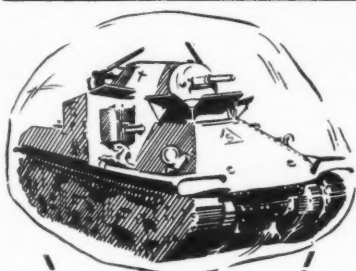
Write today for your free copy of Folder BMP

BROWNSKIN GRIZZLYBEAR

Scores Again!

A colorful folder showing how the Chrysler Corporation of Canada Ltd., protects their engines for export shipping has now been prepared. It tells the story of their use of A-19 Brownskin Grizzlybear to lick the problem of corrosion on overseas shipments.

ANGIER CORPORATION
CORROSION PREVENTIVE AND WATERPROOF PAPERS
FRAMINGHAM, MASSACHUSETTS



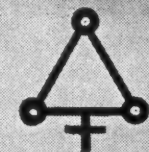
**WHEN
A TANK
TRAVELS
OVERSEAS**

ARCC materials help to prepare it for the long ocean trip.

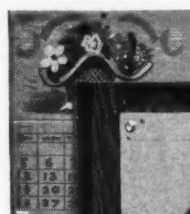
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Branded more than a quarter of a century ago, Manhattan's venerable standard bearer is livelier today than ever — wise in the ways of all adhesives — and well qualified by successful experience to tackle the toughest kind of glueing problems. The satisfaction that comes with shaking out the right answers is what keeps Manhattan's "Leo" young and on all four paws.

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Sparkling Thatcher glass makes products look better . . . sell faster. Sixty years of manufacturing "know how" enables Thatcher to produce durable, attractive glass packs. If you have a glass problem . . . write to Thatcher.

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A High Speed foot pedal sealer with positive sealing pressure and feather-touch foot pedal. Rheostat control. \$139.50

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Please rush complete information on your ☐ Doughboy Rotary Sealer ☐ Doughboy Toggle Jaw.

Firm . . .
Att'n of . . .
Address . . .
City . . . State . . .

Lamination

(Continued from page 108) foil-to-kraft laminant is an asphaltic compound formulated for low-temperature durability, high adhesive strength, and to have limited penetration into the kraft on which it is applied as a hot fluid. The cloth is laminated to the kraft-lead-foil combination by means of a solvent-type resinous adhesive. The solvent adhesive is applied to the kraft and the cloth immediately combined to the wet adhesive and the solvent removed by the application of heat. In this case, solvent removal is easy because the porosity of the cloth allows rapid diffusion.

Example No. 6 consists of an aluminum foil laminated to a cellulose acetate sheeting. This structure is being used for packaging the soluble coffee in the Army K Ration. This structure has a nearly zero water-vapor rate, sufficient durability and physical strength for use in small packages and envelopes and is made heat-sealable by the addition of a coating on the foil surface. In this case the laminant is a solvent solution of synthetic resins formulated for its adhesive qualities to the metal surface and with solvents which will not soften or affect the cellulose acetate. This structure is laminated by applying the laminant to the acetate sheeting, removing substantially all of the solvents, then combining to the foil by means of heat and pressure. Here it is necessary to remove the solvents before the plies are combined; otherwise, solvents would be trapped between the surfaces and would leave a deleterious affect upon durability of the laminated combination.

The foregoing examples show the functional and mechanical possibilities of a laminated structure. They further indicate the problems in connection with the proper choice of laminant to fit the particular ply materials which are to be combined.

(A second article in this series will describe the laminating equipment and processes necessary to the manufacture of multi-ply laminated structures.)

Stripping urea

(Continued from page 115) low side of regular urea-formaldehyde materials.

5. Good moldability and resistance to surface attack.

The stripping grade of urea differs from standard urea materials in that it has sufficient elasticity at the moment the mold is opened to permit its being instantly stripped, instead of unscrewed, from the threaded portion of the cap mold. In spite of this flexibility, finished moldings have the same permanent hardness of standard thermosetting compounds.

On the well-rounded threads used on closures, stripping urea can be successfully stripped in sizes of 15 mm. and over. Smaller caps have so great a thread depth in proportion to their diameter that the danger of splitting must be considered. Some molders use wax to aid in stripping phenolic materials but such an added lubricant is not necessary when running the stripping urea compound. In fact, a lubricant is deleterious, since it causes staining and the shearing of threads.

Stripping urea is available in the same range of colors as standard urea formulations, and it may be used in standard flat-bed or automatic stripping-type presses.

The packaging industry, ever mindful of the sales value and eye-appeal of color, will undoubtedly benefit from this wartime development.

Seals small and large cartons in small or large quantities — ECONOMICALLY

The smallest manufacturer can enjoy the same benefits of mechanical carton sealing as the large concern, with a CECO Adjustable Carton Sealer. This machine is instantly adjustable, without special tools, for any size package within a



ADJUSTABLE CARTON SEALER

wide range. It is so simple in construction and operation, that even an unskilled operator can maintain it. Let us send you facts and figures which show what a CECO Adjustable Carton Sealer can do for you.

Features—

- ✓ Low first cost
- ✓ Low maintenance cost
- ✓ Saves labor
- ✓ Increases production
- ✓ Assures tight, better-looking cartons



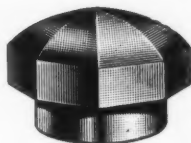
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MODEL A-3961-12

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LET us quote you on your requirements. Hundreds of dies and molds available for Essential Oil Cans, Sprinkler Tops, Screw Caps, Lead and Tin Coated Spouts, Metal Specialties. 85 years' experience in meeting the needs of packagers. Call upon us for aid.

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Time Wisened

TIME WISENED, the many users of ON-TO-STA Gummed Tapes are faithful customers. The Recognized Durability and extra Sticking Qualities of ON-TO-STA gives them assured shipping protection.

LITTLE WONDER then that they stick to ON-TO-STA products. Once Discovered, you'd Stick Too!

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Counterboy Sealed

COUNTERBOY SEALED, your war shipments are safely and quickly sealed to the exacting standards of government regulations.

COUNTERBOY EQUIPPED, your shipping department can continue today's high standards in sealing post war shipments.

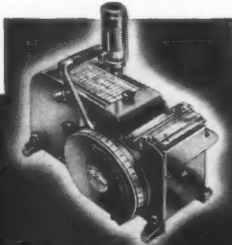
Save: Man Hours and Dollars

A COUNTERBOY Regional Distributor is as near as your phone. His rich experience in shipping problems is at your service. Your factory superintendent, purchasing or shipping executives may well benefit from his suggestions:—for speeding up production sealing;—new materials to give stronger shipments;—elimination of waste;—correction in safer methods of application,—improved work layouts etc. . . . resulting in thousand of man hours and dollars saved.

COUNTERBOY SEALING-TAPE MACHINES help your packers turn out uniform, neat, and safely sealed containers and packages. Their Automatic-Moistening Unit can be adjusted to condition any kind or grade of gummed tape for a quick, permanent seal.

Left, TAPE SHOOTER SENIOR for sealing shipping containers

Right, SIMPLEX No. 10 for sealing inside packages



SALES and SERVICE in Principal Cities

Write for descriptive circulars
54 Canal Street

BETTER PACKAGES, Inc., Shelton, Conn.

British war packing code

(Continued from page 76) degreasing may be thought to be unnecessary if the parent factory is in the same locality, but it has now become standard practice not to degrease until the components are ready for dipping and spraying with preservative.

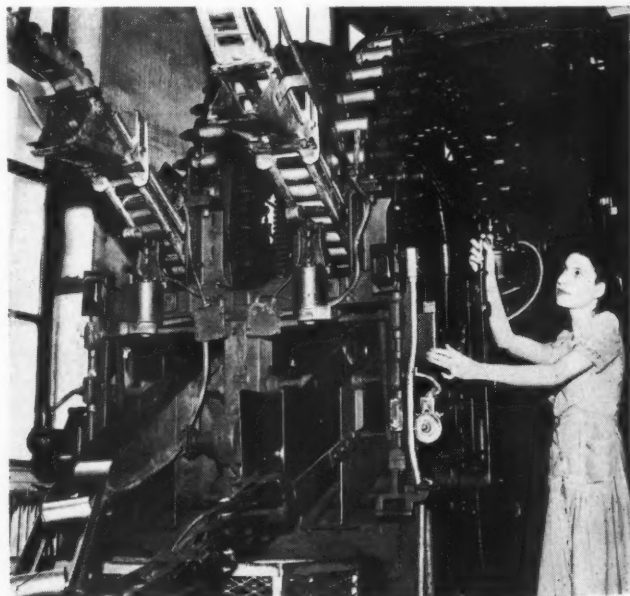
After degreasing, the components are dipped and sprayed with the specified type of preservative (generally warmed to a liquid state in tanks for easy dipping) and then allowed to drip and dry before further handling. Dripping is normally done by standing the components in mesh containers over the dipping tanks or on mesh trays which drain off into the tanks. In most instances it will be found that very little time is occupied by the drying.

Once dry, the components can be handled safely and may then be conveyed to the point where they meet the cartons and wrapping materials. Quite evidently a roller conveyor greatly facilitates the work of the prepacking department, but special non-conveyor production lines are planned when conveyor systems are unavailable.

Some firms do their own prepacking. In other instances a Ministry of Supply Depot is set up to provide for the prepacking departments of a group of firms. One such depot in the Midland Region which combines the prepacking facilities for 12 firms has increased its output from 7,700 to 160,000 packed cartons per week.

Efficiency, it is believed, is due to the highly cooperative attitude of the 12 firms concerned and the coordinating efforts of the Ministry of Supply and the managing agency.

Beer goes overseas in cans



Camouflaged cans which will carry beer to the Armed Forces overseas and Navy men on off-shore duty are rolling off American Can Co.'s production lines at the rate of over 300 per minute under the new WPB order releasing metal for this purpose. Industry estimates set Government requirements at a billion cans from the industry this year for the overseas' shipments of beer.

HERE'S TO THE Snorting Bull...



—good paper, good glue and plenty of it that's helped many a manufacturer solve his sealing problems. It can't hurt to make a trial.

Ask your jobber for samples.

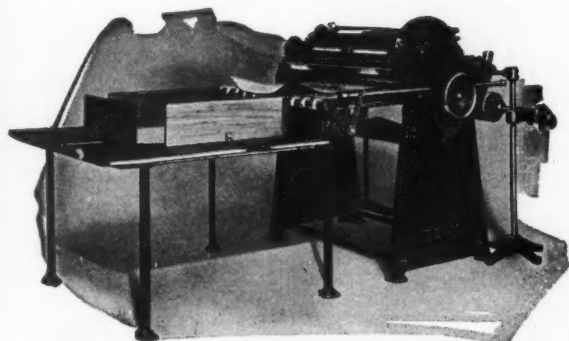


"Red SEALING

"Streak" TAPES

BROWN-BRIDGE MILLS, Inc., Troy, Ohio

Many Great Nations Are Already Planning Post War Programs as are also many business men—ARE YOU?



THE BECK SHEETER

After "Unconditional Surrender" is a fact of history, you will want the highest productive Sheeting equipment obtainable, to meet competition. Your choice may be from the hi-speed Electric Eye machines for "spot sheeting" down to the more simple standard machines for plain work.

Write us to-day for to-morrow.

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SELECTED

on Appearance

Good looking packages are first by choice. They have overwraps with smooth, glistening sides, sharp creases and perfect end seals. When all of these details are combined into one, pleasing ensemble, you are bound to have that smart, tailored look so eagerly desired. The manner in which the overwrap is applied is the special concern of the Hayssen. By means of its thermostatically controlled electric sealing and photo electric cell registration, the Hayssen gives positive assurance that every wrapping detail will be handled efficiently and effectively. Write the factory today and find out what the Hayssen can do for YOUR product.

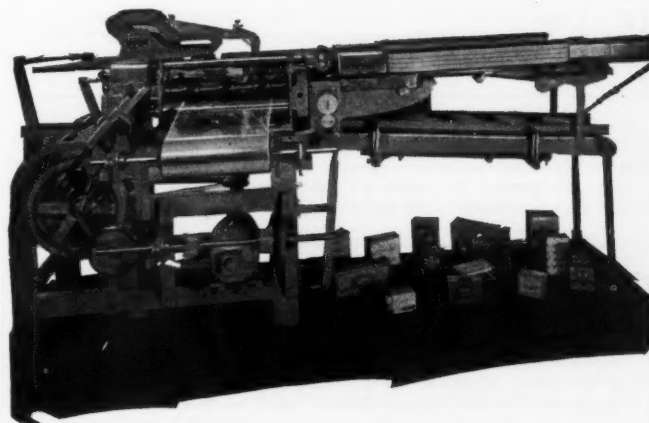
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Leading paper manufacturer and converter located in New York State has positions with excellent futures for layout men with from 3 to 5 years experience with automatic machinery. Several detailers are needed, also. Present staff is small and must be considerably enlarged for now and post-war. Write fully as to education, experience and salary requirements. Product assigned highest essentiality rating by Government authorities. If your present work will not terminate for several months we would still like to hear from you. Box 234, Modern Packaging.

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Man with complete knowledge and practical experience in cutting and creasing, die making and gluing operations. Plant located on eastern seaboard. Give detailed qualifications and previous connections. Excellent opportunity. Box 235, Modern Packaging.

S & S Set Up man with opportunity to eventually take over supervision of our Set Up Box Dept. Large midwestern Company. Write full details. Box 236, Modern Packaging.

Fancy Paper Cutter for Set Up Box Dept. Large midwestern manufacturer. Pleasant working conditions with good opportunity for the future. Box 237, Modern Packaging.

CHIEF CHEMICAL RESEARCH ENGINEER WANTED

Aggressive, creative, for development and research work, on transparent waterproof papers by midwest container manufacturer. Excellent opportunity. \$10,000 to \$20,000 salary. Box 238, Modern Packaging.

SALESMAN WANTED

with knowledge of plastics and experience in industry to handle exclusive territory for one of the largest molders, extruders and fabricators. Must have consumer, processing and packaging field contacts. Excellent opportunity. Give references, draft status, income requirements in first letter. Box 242, Modern Packaging.

CHEMISTS AND PACKAGING ENGINEERS

Leading paper manufacturer and converter situated in New York State has position with excellent futures for packaging engineers and chemists for their bag research and development division, including study of special papers and other raw materials. Present staff is small and must be considerably enlarged for now and post-war. Write fully as to education, experience and salary requirements. If your present work will not terminate for several months we would still like to hear from you.

Box 239, Modern Packaging

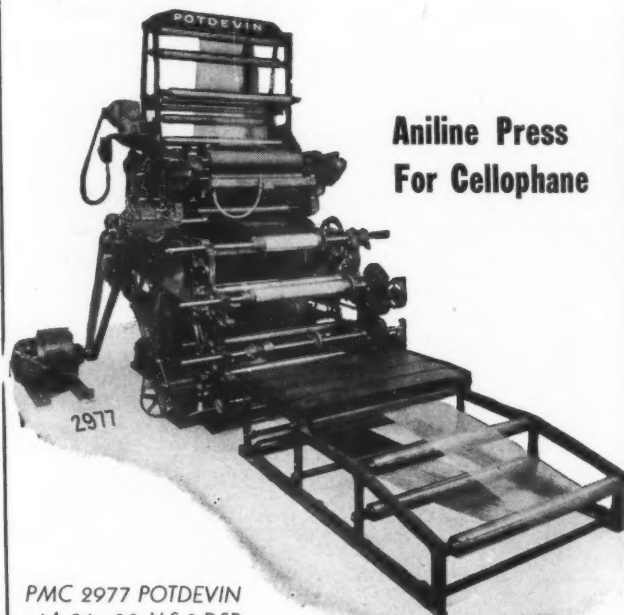
IDEA MAN WANTED

Well established set-up paper box firm is looking for the right man with PATENTABLE IDEAS for distinctive and new types of set up boxes and allied products that are made primarily of cardboard. We are concerned with present and post-war possibilities. Reply Box 240, Modern Packaging.

PACKAGING RESEARCH

Physical Chemist, Physicist or Chemical Engineer, Master degree or equivalent, to plan and interpret physical tests on product packages, and to work on development of packages and packaging processes. Chiefly a laboratory job. Applicants must be over 26 years of age, draft exempt or discharged from the Service. Present and postwar opportunities excellent in organization engaged in essential work. Box 241, Modern Packaging.

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Aniline Press
For Cellophane

PMC 2977 POTDEVIN
4A 26 x 28 US & DSR

4-Color Multi-length pigmented Aniline Ink Web Printing Press
with Unwind, Slitters and Dual Shaft Rewind.
Especially suitable for cellophane.

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Established 1893

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**MODERN PACKAGING
BRESKIN PUBLISHING COMPANY**

122 East 42nd St.

New York 17, N. Y.

JULY • 1944 151

CEREX

a colorful new thermoplastic serviceable in boiling water!

Monsanto Research Makes Plastics News of the Year With First Injection Molding Material Ever Developed That Can Hold Shape and Strength at Temperatures Well Above 212° F.

FROM MONSANTO research laboratories comes news of one of the most significant advances in the history of modern plastics . . . *a colorful, new plastic that is serviceable at temperatures well above the boiling point of water . . . yet can be fabricated with the mass-production speed and economy of injection molding!*

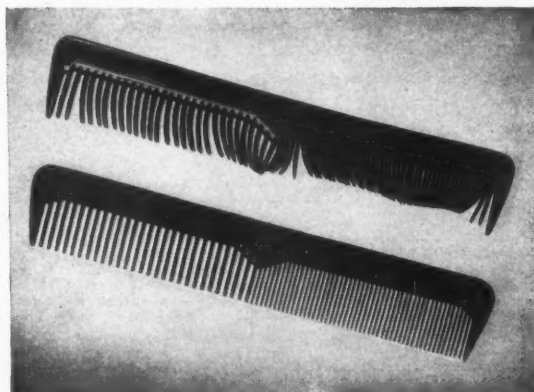
The new material, which opens up entirely new fields of usefulness to plastics, is Cerex.

Until development of Cerex, if you needed a plastic to withstand temperatures much above 200°F. you were limited to materials which could not be injection molded in standard machines, yet injection molding is the fastest, most fully automatic and generally most economical of present molding methods . . . With Cerex, however, you can mold attractive packages and closures that will hold their shape and strength at temperatures up to 230°F . . . on standard injection molding presses . . . in molds designed for other thermoplastics.

With Cerex you will also be able to get injection-molded, heat-resistant packages and closures with:

- a rainbow-wide range of colors
- good strength and shatter-resistance
- excellent dimensional stability
- hard surface
- exceptional chemical resistance

The exceptional chemical resistance of Cerex alone will open many new packaging possibilities. It is highly resistant to alkali, alcohols, weak acids and even strong, non-oxidizing acids.



This is what happened to one comb molded from a standard polystyrene compound after a few minutes in boiling water . . . while the second comb, injection-molded in the same molds from Cerex was unaffected by thirty minutes in briskly boiling water. Note how even the fine teeth of the Cerex comb have kept their shape.

Cerex compounds will eventually be priced within the range of present injection molding materials. While they will undoubtedly prove more desirable for some packaging applications already filled by other plastics, their chief value will be in jobs for which no present plastic is fully qualified, physically or on a finished-cost basis. They will supplement rather than replace the other materials in the broad and versatile family of Monsanto Plastics.

Cerex is still in pilot plant production and only limited quantities will be available for direct military uses until large-scale, manufacturing facilities can be built after the war . . . If you have a war job that calls for Cerex's unique combination of properties, however, samples can be supplied . . . If you have a postwar job that Cerex promises to fill better and more economically, more information is available . . . Write: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield 2, Massachusetts.

The broad and versatile family of Monsanto Plastics includes: Lustron polystyrenes • Monsanto vinyl acetals • Nitron cellulose nitrates • Fibestos cellulose acetates • Resinox phenolic compounds • Resimene melamine compounds. Forms in which they are supplied include: Sheets • Rods • Tubes • Molding Compounds • Industrial Resins • Coating Compounds • Vuepak Rigid, Transparent Packaging Materials.



A L L A M E R I C A N



● In all the nation's wars, in many ways, Americans have served.

This Independence Day, *Ball Brothers Company* honors its employes in the Armed Services of our Country and those who have backed our fighting men by serving well on the home front, producing glass containers for packaging vitally needed products.

After Victory, *Ball Brothers Company* and its employes will continue to serve well—providing the best in modern packaging.

"THE BEST!" In war and in peace! That is what is meant by "All American!"



BACK THE ATTACK
BUY MORE WAR BONDS



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BROTHERS COMPANY
General Offices
MUNCIE, INDIANA, U. S. A.

...only the label will change



Today this moisture vaporproof envelope may carry a cup of good, fresh coffee to some boy you know on a distant battlefield. Tomorrow, changed only by colorful and appealing design, this same en-

velope can protect and sell *your* product from the Equator to the Arctic Circle.

Many of the packages we are making now were never heard of before the war . . . have never been used for civilian goods. Naturally our entire production of *these* packages must be used to protect food and equipment for our fighting men until the war is won. Then they'll return to merchandise and protect thousands of peace-time products. And what a job they'll do, for no packages before have undergone such brutal tests.

Here at Shellmar we are already working with many companies on the postwar application of these packages . . . for everything from dehydrated foods to precision machine parts. Our laboratory and development staffs originated many of today's outstanding package achievements. They know and work with, not one, but *every* packaging material of merit.

Why not submit your packaging problem . . . postwar or present? Remember, many excellent materials are available for immediate production.



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